Australasian Plant Conservation

BULLETIN OF THE AUSTRALIAN NETWORK FOR PLANT CONSERVATION INC

VOLUME 18 NUMBER 1 • JUNE - AUGUST 2009

It's time to renew Landcare

People, passion and place: connecting for conservation

People, passion and place: Millie's story

People, passion and place: Biz's story

Habitat 141: a people project

Protecting Swamp Sheoke: an endangered species of Victoria's Wimmera Woodlands

Conservation covenants: why bother?

How can ecosystem function be placed at the heart of regional biodiversity conservation projects?

And much much more …

SPECIAL THEME: CONSERVATION ON PRIVATE LAND

This issue

From the Editor 1
Addendum 1
A note from the President 2
It's time to renew Landcare 2
People, passion and place: connecting for conservation 6
People, passion and place: Millie's story 8
People, passion and place: Biz's story 10
Habitat 141: evolution of the beast (Abstract) 12
Habitat 141: a people project 12
Protecting Swamp Sheoke 14
Conservation covenants: why bother? 15
How can ecosystem function be placed at the heart of regional biodiversity conservation projects? 17
Minding our own biodiversity: protect and produce 19
A 'bottom up' approach to landscape restoration 21
The role of markets in conservation (Abstract) 23
Growing private land biodiversity in Victoria (Abstract) 23
Victoria's Plains Tender: a farmer's experience 24
National environmental law (EPBC Act): responsibility and opportunity 26
Glenelg Hopkins Catchment Management Authority 28
Does Queensland do it better? Three nature refuges in Central Queensland 29
Field trip visit to the Grassy Groundcover Research Project's site at Moyston 31

Regular Features

Report from NZ Plant Conservation Network 32
Research Roundup 33
Book Review 33
Information Resources and Useful Websites 34
Conferences and Workshops 35

Australasian Plant Conservation

Editor
Rosemary Purdie

Editorial Team
Paul Adam, Phillip Ainsley and Sue Mathams

Layout & Graphic Design
Siobhan Duffy

Australasian Plant Conservation is produced by the ANPC Inc. with assistance from the Australian National Botanic Gardens. Support for this issue was also generously provided by the Norman Wettenhall Foundation.

Australasian Plant Conservation is printed on recycled paper.
ISSN 1039-6500

ANPC National Office

GPO Box 1777, Canberra, ACT 2601, Australia
Ph: (02) 6250 9509
Fax: (02) 6250 9528
Email: anpc@anpc.asn.au
Web: http://www.anpc.asn.au

ANPC Email List

To subscribe or unsubscribe go to http://anpcnews.blogspot.com/.
To post a message, send a request to anpc@anpc.asn.au.

National Office Staff
Sue Mathams and Merryl Bradley

Volunteers
Odette Mayne and Richard Bomford

ANPC Committee

President
Bob Makinson

Vice President
David Coates

Treasurer
Adrian Fethers

Secretary
Helena Mills

Committee Members
Paul Adam, Phil Ainsley, Tom Celebrezze,
Paul Gibson-Roy, Roger Good,
Deanna Marshall, Leonie Monks, Zoe Smith,
David Taylor and Judy West

New Zealand Plant Conservation Network

President Ian Spellerberg
Secretary John Sawyer
PO Box 5086 Wellington, New Zealand.
Email: info@nzpcn.org.nz
Web: www.nzpcn.org.nz

ANPC Inc.
Mission Statement

"To promote and improve plant conservation"

Contributing to *Australasian Plant Conservation*

Australasian Plant Conservation is a forum for information exchange for all those involved in plant conservation: please use it to share your work with others. Articles, information snippets, details of new publications or research, and diary dates are welcome. **The deadline for the September–November 2009 issue is Friday 28 August 2009.** The theme of that issue will be 'The role of Botanic Gardens in plant conservation'. General articles are also very welcome.Please contact Rosemary Purdie if you are intending to submit an article: Rosemary.Purdie@environment.gov.au.

Authors are encouraged to submit images with articles or information. Please submit images as clear prints, slides, drawings, or in electronic format. Electronic images need to be at least 300 dpi resolution, submitted in at least the size that they are to be published, in tif, jpg or gif format. Guidelines for authors are at: http://www.anpc.asn.au/anpc/pdffiles/APCGuideContrib.pdf.

Please send articles, no more than 1100 words, as a MS Word (2000 compatible) or rich text format file, on disk or by email to: Rosemary.Purdie@environment.gov.au.

Opinions expressed in this publication are those of the authors and are not necessarily those of the ANPC or its sponsors. Material presented in *Australasian Plant Conservation* may be copied for personal use or published for educational purposes, provided that any extracts are fully acknowledged. Where any material is credited to and/or copyright to another source, please contact the original source for permission to reprint.

Front cover: Tree planting at Queanbeyan, NSW in 2008. Photo: Andrew Campbell
Cover design: Siobhan Duffy.
Printed by: Goanna Print, Canberra.

From the Editor

Rosemary Purdie

c/- Centre for Plant Biodiversity Research, Canberra. Email: Rosemary.Purdie@environment.gov.au

In this issue of *Australasian Plant Conservation* we share with you presentations from the ANPC Second National Forum held at Halls Gap, The Grampians, Victoria on 30 April and 1 May, 2009. The theme of the forum—*Minding your own biodiversity: conservation on private land*—attracted 124 participants from Queensland to Tasmania and to Western Australia. They included private land holders, business consultants, researchers and people from a variety of non-government organisations, catchment management authorities and all three levels of government.

The papers start with Andrew Campbell's keynote address at the Forum Dinner. After looking back to the start of the Decade of Landcare that commenced in mid 1989, Andrew reviewed subsequent progress in environmental and natural resource management in Australia. He went on to outline seven planks for reform underpinned by what he believes are the key policy principles required to act as 'reinforcing mesh' for a more coherent and cohesive approach in the future.

Subsequent material is presented in the order of the Forum sessions. Session One—*People, Passion and Place: Connecting for Conservation*—contains papers by Siwan Lovett, Millie Nicholls and Biz Nicolson that discuss and illustrate the importance of the 'Five P's' (profit, proof, people, place and promise) in on-ground plant conservation work. Session Two—*The Big Picture: Large-scale Bio-link projects*—contains an abstract by Ron Dodds and a paper by Andrew Bradey talking about the Habitat 141 project. Session three—*Regional and local scale schemes*—contains papers by Adam Blake, Ros Bradey, Paul Foreman, Lanie Pearce, and Beth Mellick, Julia Brown and Marie Jones, each describing various projects or work they have been involved in. Session four—*Multiple benefits of working with native vegetation*—contains abstracts by Ken Moore and James Todd and a paper by Neville Oddie that relate to market-based instruments. Session five papers by Ross Rowe, Lilian Parker and Ian and Cathy Herbert relate to various aspects of that session theme—*The context in which we work: legislation, frameworks and implications for landholders*. Finally, Paul Gibson-Roy provides a brief description about one of the sites visited by participants during the field trip on the second day.

Overall feedback on the Forum location, logistics, content and the learning participants took away with them, was very positive. The outcomes of the Forum in relation to current support and incentives for conservation on private land are summarised in a document that will be made available on the ANPC website. They include key things that participants felt are working well, those that are not working well, and opportunities for improvement.

The remainder of this issue covers regular items, including the report from the New Zealand Plant Conservation Network, a book review, a list of recent articles published in key scientific journals and useful websites and other information resources. If you know of new websites or other resources that would be of interest to ANPC members, why not send me details so I can include them in the next issue. Happy reading!

Subscribe to ANPC News by joining the new ANPC Email List

ANPC has established a new email subscription list that allows us to keep you up to date with the latest news. We include things like plant conservation initiatives, grants and other funding opportunities, conferences, workshops and courses, and opportunities to comment on plant conservation strategies and other documents.

Joining up is as easy as visiting the new ANPC News web site (http://anpcnews.blogspot.com/) and subscribing via the box on the left hand side of the web page. Once subscribed, you will receive an update whenever news items are added to the ANPC News web site, which will be at least once a month.

Addendum

The article 'The role of seed orchards in plant conservation', published in *Australasian Plant Conservation* 17(4), pages 10-12, should have the following addition.

Acknowledgements

The support of the South Coast Natural Resource Management Inc. is acknowledged in maintaining the seed orchard project.

A note from the President

Since the last issue of *Australasian Plant Conservation*, there have been more changes in the ANPC National Office in Canberra. Our Project Manager, Bruce Boyes, was poached to help manage a $77 million Hawkesbury-Nepean River Recovery Package. It was an offer too good to refuse! The ANPC Committee congratulates Bruce on his new appointment, and thanks him for the significant contribution he made to ANPC during his short time with us. These contributions include helping to make the Forum at Halls Gap a big success, setting up a new and improved system for the ANPC email bulletin, and bringing a fresh big-picture view to the organisation.

With Bruce's departure, we are delighted to welcome **Sue Mathams** as the new Project Manager. Hailing until recently from the Atherton area in northern Queensland, Sue brings a wealth of experience and expertise that includes significant project management, hands-on plant conservation, and environmental education, training and extension work.

Pam Strickland, the ANPC Office Manager for the last five years has also left ANPC, to take up a full-time position with the Australian Government. The Committee thanks Pam for the sterling effort she has put in over that time, including keeping the office running, and helping with the hundreds of administrative details that make for successful ANPC conferences and workshops. Pam also had another job and 'spare time' charity involvement—we were lucky to be a part of her life.

We are delighted to welcome **Merryl Bradley** as the new Office Manager. Merryl has a thorough knowledge of the ANPC and the Office, having worked with us as a volunteer since late 2006. In a previous life she has held senior manager positions in the public sector, and we are already getting the benefit of her wide experience.

On an entirely different note, the all-new second edition of the germplasm guidelines—*Plant Germplasm Conservation in Australia*—is getting closer to publication, under the capable steerage of Cathy Offord (Mount Annan Botanic Garden) and Tom North (AuSCaR Perth). A launch is planned for Threatened Species Day, Monday 7th September. Copies can be ordered from the ANPC website, as shown on the back cover of this issue of *Australasian Plant Conservation*.

Bob Makinson, ANPC President

ANPC Second National Forum Guest Presentation

It's time to renew Landcare

Andrew Campbell

Triple Helix Consulting, Queanbeyan, NSW. Email: andrew@triplehelix.com.au

Landcare Origins

In July 1989 Prime Minister Bob Hawke stood at the junction of the Murray and Darling rivers and announced that the 1990s would be the Decade of Landcare. He did so accompanied and supported by the National Farmers' Federation (NFF), the Australian Conservation Foundation (ACF), and the Coalition opposition. With bipartisan support, he announced a thirty-fold increase in Commonwealth funding for landcare and nature conservation to $340 million over ten years. This may not seem so much now, but at the time the then National Soil Conservation Program had a total budget less than the landscaping budget for the sparkling new Parliament House.

The current federal government came to power in November 2007 promising new leadership, an education revolution, cooperative federalism, a positive approach to climate change and a re-investment in innovation, infrastructure and productive capacity. More recently, Prime Minister Kevin Rudd suggested in a lecture at Westminster Abbey in the lead up to the G20 Leaders' Summit that "To these [traditional] values of security, liberty and prosperity must also be grafted the values of equity, of sustainability and community".

This big picture agenda—new leadership, an education revolution, taking climate change seriously and tackling it vigorously, making the federation work better, and reinvesting in skills and infrastructure to build productive capacity, underpinned by values of equity, sustainability and community—is appropriate and timely. It is a great framework for a contemporary approach to the environment that recognises that people are central to environmental problems and solutions, not a malign externality.

Taking Stock

As the 20 year anniversary of the Hawke announcement approaches, it is worth reflecting on how far we have come, where we are now, and where to next.

Over the last two decades of environmental and natural resource management programs in Australia, there have been three key developments: voluntary, community-based landcare; the evolution of a regional-scale delivery model based on catchment management organisations; and a more recent push for more evidence-based investment and reporting.

These are highly complementary—at best synergistic—approaches to more sustainable management of the environment and land and water resources, and to public investment. Each is essential, but insufficient on its own, to bring about more sustainable management of Australia's natural resources and more resilient rural and regional communities.

Challenges

While the above three approaches ideally should proceed in parallel, each reinforcing the others, there has been an increasing tendency to see them as sequential developments—that we have 'been there and done that' with landcare, and to a lesser extent the regional delivery model. In my view this is a grave error. There is much to be gained from taking the best elements of the landcare approaches of the Hawke-Keating era and rejuvenating them for the next decade and beyond, as part of a more comprehensive re-think of agriculture, environment and natural resource management in this country. The drivers are compelling: we are already in an incredibly difficult climatic situation, in southern Australia in particular, and we are in a period of rapid, multifaceted, even bewildering change that is likely to intensify.

Let's take the food system as an example. Healthy environments, healthy farming systems, healthy foods and healthy people are intricately intertwined.

If current trends in human population and consumption patterns continue, the world will need to produce almost twice as much food by 2050, in a rapidly changing climate, with declining production of oil, and rising prices for energy, water, fertilisers, and soon, carbon. The era of abundant, cheap fossil fuels is over. Traditional avenues of expanding production though clearing, irrigating and cultivating more land are narrowing, and food is now competing with energy for land and water resources. Moreover, consumers in developed countries are increasingly concerned about the quality, safety, environmental impact, human health and animal welfare aspects of their food.

Food systems are at a crunch point where the climate, water, energy and health agendas collide—often with collateral damage for rural communities, rivers and biodiversity. We need food and farming systems to be much more efficient (in terms of water, carbon and energy), productive, resilient and healthy. This imperative has huge implications for the environment and natural resources, in urban and peri-urban areas as well as in traditional agricultural landscapes.

Planks for Reform

One of the key implications is that we need to re-invest in ways of keeping people at a grassroots community level involved, informed and inspired to develop and implement new (and maybe old) ways of producing healthy food, efficiently and humanely while looking after the environment. This will be technically challenging, so there needs to be a strong underpinning platform of knowledge, and it will require policy frameworks that are comprehensive, cohesive, powerful and durable.

Taking these threads of People, Knowledge and Policy, a new platform for reforming environment and natural resource management in Australia could be built on seven planks:

- rejuvenating Landcare, respecting local knowledge and re-engaging the community;
- reinforcing the regional delivery model for managing natural resources;
- rewiring environmental information systems;
- revolutionising agricultural research, extension and education;
- reforming drought policy and rural and regional services;
- re-unifying the carbon, water, energy, food, farming and fire policy agendas; and
- redesigning the institutional architecture around cooperative environmental federalism.

Landcare. Social capital and natural capital are interdependent—you cannot sustain one for long without the other. If landcare did not exist, we would have to invent it. Our great opportunity in environmental and natural resource management is to build and energise a framework for partnership between government, and the community and private sectors, that leads the world. This will help us to target and get the best possible return on the large public and private investments that are needed to sustain our natural capital—our water and energy supplies, the soils that underpin our food system, our unique biodiversity and very special places. Such a platform would encourage and support the efforts of grassroots volunteers across the country, and involve hundreds of thousands of people and students in activities that help them to both better understand their local environments and the processes affecting them, and to take local actions that make a practical difference.

Regional delivery. We have made big strides over the last decade in building 'the regional model' for natural resource management that seeks to take a more strategic approach at a landscape or catchment scale, and a more integrated approach across different issues, while maintaining a community base. Australia (especially in the Intensive Land Use Zone where the vast majority of us live) desperately needs environmentally literate organisations at a scale larger than local governments but smaller than states, that can be instrumental in land use planning, in directing landscape-scale restoration projects, in supporting and guiding community efforts, and as 'the keeper of the long view' as custodians of community and scientific knowledge. This regional framework is crucial, and we need to take the time to get it right, not undermine it before it has had a real chance to deliver.

Knowledge. The knowledge agenda is fundamental to better resource and environmental management in Australia. Better management and use of what we already know, much greater engagement of Australian citizens in gathering environmental information, a genuine revolution in environmental education using latest technologies, much better tracking of our progress, and much smarter ways of managing our research efforts in generating new knowledge for changing times are all essential elements of a knowledge agenda that supports innovation and engagement, and that helps us to make best use of limited public and private investment.

Policy agenda. The policy agenda is where everything comes together and where the new leadership is clearly articulated. We are seeing rapid and unprecedented convergence in the policy imperatives for water, energy and food systems in a drying, warming climate. We know we need radical reform to drought policy to reward preparedness and to build resilience, rather than propping up unviable and unsustainable practices. The Victorian fires are a terrible marker of the need to rethink the very basis of where and how we live in this continent, and of the nature of resilience and how to reinforce it. The levels of community understanding ('environmental literacy') about a factor as fundamental as the Fire Danger Index, show how far we have yet to go.

Policy Principles for the Future

The Prime Minister's big picture issues and commitments from the 2007 election and his more recently enunciated values of equity, sustainability and community provide an important ethical base for an environmental agenda. However, we also need policy principles that act as reinforcing mesh in building a more coherent and cohesive package.

Building resilience. Resilience is a key facet of sustainability, particularly in an era of intensifying climate change. It refers to the extent to which a given system (an ecosystem, farming system, human community or whatever) can withstand, survive and recover from severe shocks or disturbance, without moving to a permanently altered state. Aspects of resilience include flexibility, localised solutions and leadership, strong networks and links, and diversity. Resilience can be built, enabling individuals and communities to bounce back from adversity.

Involvement in on-ground activities can help people better understand and own environmental issues. Photo: Andrew Campbell

Balancing centralism and subsidiarity. Over recent years under both the Howard and Rudd administrations, centralisation has ruled in Australian environmental management. Many of the drivers are compelling, and the responses have been understandable: for both the carbon and water agendas it is obvious that we don't need fragmented, inconsistent or incompatible approaches across state borders. But there are emerging signs that the pendulum has swung too far. We need to build capacity, and to devolve resources and authority, down to the levels where the vast majority of land, water and vegetation management decisions are made.

Re-engaging stakeholders and devolving responsibility. Closely allied with the previous principle, it is clear that environmental problems won't be fixed, and new challenges won't be tackled effectively, if everybody thinks it is someone else's problem. There is a grave risk, given the global nature of the climate challenge, that people and stakeholder groups feel disempowered, paralysed and simply disengage. Now more than ever, we need to be investing in processes and frameworks, like landcare and regional/catchment bodies, that help individuals, communities and stakeholder groups to take some ownership of the issues directly affecting them, and to access information and constructive support.

Taking the time necessary to sort through complex, contested, connected issues. In Canberra's political hothouse, 20 days is a long time and 20 years (seven or eight electoral cycles) is an eternity. But the issues we are tackling will play out over decades and centuries. Many aspects of our responses need to be far-sighted, hard-wired into our systems of government and decision-making, and durable over many administrations. These things take time to work out, and it is important to allocate the time and the resources to get them right. The British government's approach over the last two years in developing a new food strategy for the 21st century, driven by the Cabinet Office and supported by universities, industry stakeholders, NGOs and think tanks such as Chatham House, is a good example.

Building, sustaining and using a comprehensive evidence base. Evidence-based policy obviously requires an evidence base, yet our most recent national State of the Environment Report concluded that our environmental evidence base is so poor that it is difficult to tell if we are going forwards or backwards on most measures of environmental health. We are finally taking big strides with water and carbon accounting, although they should be better integrated, and the terrestrial land and biodiversity legs of the stool are largely missing. New technologies mean that we can get a comprehensive picture of trends in our environment faster and cheaper than ever before. Linkages with the new broadband roll-out, and community engagement and environmental education efforts, would enable Australia to build the world's best 'environmental dashboard'. This would help us see where we are headed, how fast, with how much petrol left in the tank, and a decent set of warning lights and stress indicators.

Investing in skills, knowledge, innovation and leadership. We need to develop new systems of food production for a much more challenging world, that make far more efficient use of resources while being kinder on the environment and delivering healthier product mixes to the consumer. This is a major technical challenge, that will require world-leading research, technological innovation and sophisticated knowledge systems that best capture and make accessible what is already known, and new information as it emerges. Systems make things possible, but people make things happen. Agricultural education in Australia is a basket case, with declining enrolments and entry scores at tertiary level and a fragmented approach at vocational level. We need to be attracting the best and brightest people of all ages to work in this area and to be providing world-class education and training opportunities. We also need to be investing in leadership at all levels to develop people who are prepared to think and act outside the square, and bring people with them in developing new approaches.

Budgeting for longer term stability. One of the striking features of Bob Hawke's Landcare announcement in 1989 was its bipartisan dimension—not just the political parties but also the rich symbolism and political potency of the ACF-NFF partnership. Another was the commitment of funding for a decade. Short-term funding cycles, and the even shorter-term employment contracts that they engender, are incredibly corrosive for any attempt to build a stable long-term platform at a community level. We need to make a national long-term commitment to budgeting for 'Repairs and Maintenance' of our natural capital base—both ecological and social infrastructure—just as we would expect any prudent, well-run business to do for its own crucial infrastructure. Rolling decadal budget cycles would be a good start.

Conclusion

A new approach to managing Australia's natural capital needs to be developed against a challenging backdrop: rapid environmental change, increasingly difficult climatic conditions, struggling food systems, a rural sector under pressure, frustrations within the environment movement and the wider community seeking more emphasis on sustainability, and a seismic shift in the relationship between the state and the market in western liberal democracies.

Right now—a time of flux, of rapid change and of re-thinking accepted norms—is exactly the time to be implementing a new approach to managing our natural capital. A bipartisan commitment to rejuvenate the landcare movement, building on the local and regional community base for environmental action over the next decade, would be an apt way to mark the 20 year anniversary of the Hawke government's launch of the Decade of Landcare. It would also give tangible effect to the Prime Minister's values of equity, community and sustainability.

People, passion and place: connecting for conservation

Siwan Lovett

Australian River Restoration Centre, Canberra, ACT. Email: siwan@webone.com.au

Introduction

Our natural environment inspires, delights, motivates and evokes passion for the places we experience. It is through their passion that people find the strength, desire and commitment to conserve and protect native vegetation, their ways of life, connection to each other, and the landscape within which they live. Yet, we rarely talk about emotion in our discussions about better managing our natural resources. Instead, we focus on the science of protection and restoration, without considering the human element we need, to put any of our rational 'plans' into effect. We also generally fail to acknowledge the wealth of experience and skills the people we work with already have, as the technical rationale tends to 'drown out' the voice of experience. This situation has arisen because in our society 'science' and 'rational thought' is valued more highly than the other forms of knowledge people have about the environment in which they live.

Mention the term 'knowledge' and we tend to think about the range of information presented to us in publications and workshops that outline how particular parts of our environment function, for example nitrogen processes in riparian areas; groundwater seepage or in-stream temperature and its importance for river health. The knowledge contained in these publications can be described as 'cognitive', that is, knowledge based on what we define as 'rational' or 'logical'. We assert that people will be able to make informed decisions when they have a sound technical base upon which to weigh various options and select the one that is appropriate to their needs. Our modern world supports and favours cognitive ways of knowing, and we are more likely to be successful in gaining funding when we can present arguments based on fact rather than feeling.

However, this 'cognitive' approach to knowledge goes against the reality that most people make decisions on emotional rather than rational grounds. James Raffan, a writer who is passionate about rivers and our relationship to them, argues that we should explicitly recognise this and move to thinking about natural resources management and people's experiences of it, through the range of senses (sight, smell, touch, feel, hear) and 'intelligences' (visual, dance, musical, artistic) that we use to interact with our world. He argues that until we do this, we will fail to engage people in natural resources management because cognitive 'knowing' is not personal enough to motivate someone into action. It is only through personal experience that public knowledge becomes meaningful.

Hopkins River on Mike Wagg's property in Hamilton, Victoria. Mike is passionate about protecting this special 'place' on his farm. Photo: Mike Wagg

Raffan's ideas are borne out by the definition of 'knowledge' in the *Concise Oxford Dictionary*: 'Knowing, familiarity gained by experience (of person, thing or fact)'. This definition provides a much broader conception of knowledge as being something gained through experience. It enables us to consider the range of experiences that motivate people to behave, think and act the way they do. For example, how someone experiences the natural world can be expressed through paintings, poetry, dance and song. Cultures across the world provide insights into their relationship to their world in writings, ritual and ceremony—all of which are ways of experiencing our natural environment and our place in it. A purely 'cognitive' experience fails to tap into the emotion that drives people to do particular things and, as a result, does not enable a complete understanding about how that person relates to their environment. Without that understanding it is often difficult to gain trust and acceptance from those you might wish to work with to improve natural resources management outcomes.

So where does this leave us? Given that we know emotion is what largely governs decision-making, it means that to maximise beneficial natural resources management outcomes we need to include the range of experiences people have in the work that we do. By using a framework called the 'Five P's' it is possible to incorporate the many different factors and experiences that impact upon a person working in natural resources management. The Five P's are explained below using the Land Water & Wool—Rivers Program as an example of how the framework can be applied to 'real life'.

Profit

When we use the term profit, it tends to be given a very narrow interpretation that, in general, relates to how much money is being made from a particular activity. The dictionary, however, defines it as 'advantage', 'benefit' or 'gain'—a much broader way of thinking about the term. When working with woolgrowers it was clear that although economics was an important motivator for action, it was often a desire to be able to leave their property in better condition than when they took it over, or to restore a part of the creek that is special as a place for the family to gather, that was motivating their desire to do something. Profit in this sense means far more than a commercial transaction or a decision based purely on business principles—it is about the range of benefits that can accrue from a decision, whether they be at an individual, family or community level.

Proof

High quality, technically rigorous science that is able to be applied is fundamentally important for good natural resources management decision-making. Without good science underpinning management recommendations, there can be little confidence for the end-user that the required outcomes will be achieved. Scientists working on the Rivers Program knew that their work had to have practical application, so proof when used in this context, is to provide certainty to woolgrowers that the tools, techniques and guidelines that are developed, are done so on the basis of excellent science. Proof becomes important when it is presented in ways that people can relate to and understand how it can be used in their daily life, giving them confidence to act.

People

In essence, managing natural resources is all about people and how we interact with our environment. By mixing social scientists with biophysical scientists, the Rivers Program was fortunate in developing a team of people with different skills, but who worked well together and who were committed to getting the best outcome possible for end-users. Considerable effort was made to 'look after' the woolgrowers working on demonstration sites and to learn from their experience of living on their land. A range of communication techniques (e.g. oral histories, photo exhibitions, focus groups) was used to develop networks throughout the research, industry, government and non-government sectors involved in wool and natural resources management.

Place

When you ask someone what motivates them to change their behaviour, as we have seen earlier, it generally comes down to a feeling. Emotion is what drives us to do most things, yet it is often not talked about and few resources are allocated to taking the time to understand the socio-cultural context within which someone is located. Without this understanding it is difficult to develop guidelines, management recommendations or tools that will be used. Trust and confidence take a long time to build, and asking someone to change their behaviour overnight is difficult when there may be no immediate benefit to them. The Rivers Program tried to create a 'place' for people to turn to for advice and assistance by providing excellent tools and materials, and by employing local project coordinators who stayed on in the community long after the project finished. Local people have been trained in the use of new techniques so that they can pass those skills on to others in the region. In this way, we tried to ensure that the 'places' we have been working in can continue to undertake river restoration work with others in their local community.

Promise

This final 'P' is the most difficult to describe, yet it is about valuing the relationships between people that generate trust, confidence and a desire to work together. Promises were made to wool-growing communities that we would listen, empathise, work together and leave something behind when the Rivers Program finished. We were committed to ensuring we delivered on this promise and examples in this paper demonstrate how we are doing it (oral histories, employing local project coordinators etc).

By developing relationships of trust through valuing and respecting each other we can work together to protect and restore our unique environments. Photo: Allison Mortlock

Conclusion

By examining the Land Water & Wool—Rivers Program through the Five P framework it is clear that each 'P' is equally important. In natural resources management there is a tendency to focus on the first two (Profit and Proof) with much talk, but few resources allocated to the other three. The five 'P's is an attempt to explicitly recognise the importance of considering the biophysical, economic, social and environmental together, rather than as separate parts of a puzzle.

Ideally, our work in natural resources management needs to be inclusive, celebratory and able to incorporate the range of experiences, and hence knowledge, people have of their environment. The following papers from Millie Nicholls and Biz Nicolson demonstrate the importance of emotion, 'knowledge' and the need for natural resources management to value people and their experiences.

People, passion and place: Millie's story

Millie Nicholls

North Marola, Clare, SA. Email: northmarola@bigpond.com

My place is in the Mid North of South Australia, in the wine growing region of the Clare Valley. I live there because my great-great grandfather, who was an admiral in the Royal Navy, had a vision of a better life for his sons in the new colony of South Australia.

My Family

On Christmas Day, 1841, my 23 year old great grandfather and his brothers found themselves a campsite on the side of a small creek 100 miles north of Adelaide. This scene (Figure 1), painted shortly after their arrival, looks today very much as it did 168 years ago. The timber fence has given way to wire, the horses to machines, the native grasses to crops, and the sheoaks have long gone. Long gone, too, are the large gatherings of Kaurna people, whom the young men complained kept them awake at night with the sound of their corroborees.

It was a simple beginning, but by the time he died 55 years later, my great grandfather had survived droughts, bushfires and depressions, and become a wealthy man. His children, and many of his grandchildren, lived very comfortable lives moving between Australia and England, the place they all seemed to regard as home.

It was the Depression of the 1930s that brought them back to reality—my father was 23 when he took over the family property in 1930. One of his first moves was to employ two men to ring bark trees for 2/6 per acre. After the war came cheap energy and the wool boom. This was a common scene in my childhood—trees stopped the grass growing and had to be removed (Figure 2). Shrubs such as bursaria and wattles harboured rabbits, and they too joined the big piles of timber that were subsequently burnt. I found it all very exciting.

The Blue Gum woodland was replaced by improved pastures and sheep which were the mainstay of my family's business. I remember lying awake and listening to the bush stone curlews calling at night. They stopped calling sometime in the 1960's, but I didn't understand why until much later.

In my generation, this destruction has continued. Mid-northern South Australia was predominantly grazing country until the 1990's. Now the pastures, both native and improved, have been ripped up and are continuously cropped. Habitat destruction has, if anything, increased rather than decreased. The focus changed from clearing trees, which were mostly gone on the arable land anyway, to clearing grasslands and picking rocks to make cropping easier.

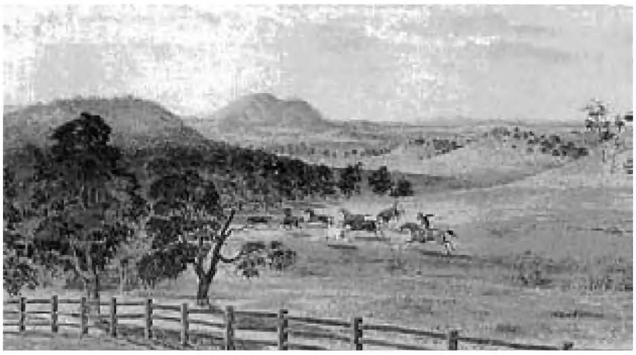


Figure 1. Painting of early settlers' impression of the landscape that became the Nicholls' family farm. Photo: Nicholls Family

Our Block

My husband and I moved onto a block of what was considered unimproved, poor quality grazing country. Because we were both interested in birds, we left the trees alone, but to my great regret, we ploughed up over a thousand acres of good quality native grassland so we could grow crops.

We also spread super and pasture seed by air over our hills, which were predominantly open grassy woodland. After ten years of spending lots of money and getting no results, we started to think—at last. What were these grasses that, despite our best efforts, refused to die?

No one could tell us. No-one in my region knew any of what I now know to be common native grasses—species of *Danthonia*, *Stipa* and *Aristida*. I didn't know that a herbarium existed in those days. I am sure they could have told me what the plants were, but there was certainly no interest in native grasses anywhere else!

An opportunity to spend a few years in Adelaide led me to do a Science degree majoring in Botany. I came out of that course knowing little more about grasses than I did when I went in. Grasses were too hard!

Discovering Grasslands

In 1996, the World Wide Fund for Nature recognised that the Mid North was originally a grassland area, and initiated a project to raise awareness of grasslands in the region. I got a small part time job with this project—I was the local knowledge component, and Ann Prescott, a well known botanist, was the botanical expert. We spent five years discovering grasslands, and raising awareness of them through working with people and community groups. We could have achieved so much more if we had been able to obtain some grant funding, but the government was not interested at that time because the grasslands were nearly all on private land and being productively used.

With some neighbours, we started a local Landcare group which had a focus on grasslands and grassy woodlands. It was a very successful group for 10 years, until Natural Resource Management came along. Now there is no more funding for Landcare groups, so we have gone into recess.

With an increasing awareness by government of grasslands, the Mid North Grasslands Working Group was formed to administer a large grassland project—at last there was money for incentives to manage grasslands, both for grazing and conservation. There was also a large component of money for research, and six years of grazing management trials followed. This component was co-funded by Land, Water and Wool for the final three years of its existence. Again, there was good community involvement and support, and it was considered a very successful project. But it will also go into recess next year due to the current lack of funding for this type of group.

Towards Sustainable Farming

What has happened on our farm in the last 15 years, since we discovered that the plants we were trying to kill were actually just as productive as and far tougher than the plants we were hoping to grow?

We now use a grazing system that is based on plant growth, rather than traditional set stocking. It has been a challenge to change our focus from our animals to our plants, and we still make mistakes, but our grassy woodlands are in far better condition than they were 10 years ago.

We are using minimal input, biological cropping practices on our better land, and we are trying ‘No Kill’ cropping on our rougher, less productive country, hoping to regenerate native grasslands in these areas. We have fenced off more than 10% of our farm with the aim of improving the diversity of the vegetation in these areas, and have recorded over 140 species of native plants on the farm.

We have left standing the trees that were ringbarked in the 1930s, as they make great habitat. We have seen 120 species of birds and have six species of bats resident on the property. All our fallen timber and rocks are left to provide habitat as well.

Conclusion

We are confident that our farming practices are slowly becoming sustainable, and we are very pleased with the regeneration of our native vegetation. We know we still have a long way to go to repair the damage done over the last 160 years, but we were greatly encouraged to see a bush stone curlew on our farm recently—the first to be seen in the district for 40 years. It gives us hope that we must be doing something right at last!

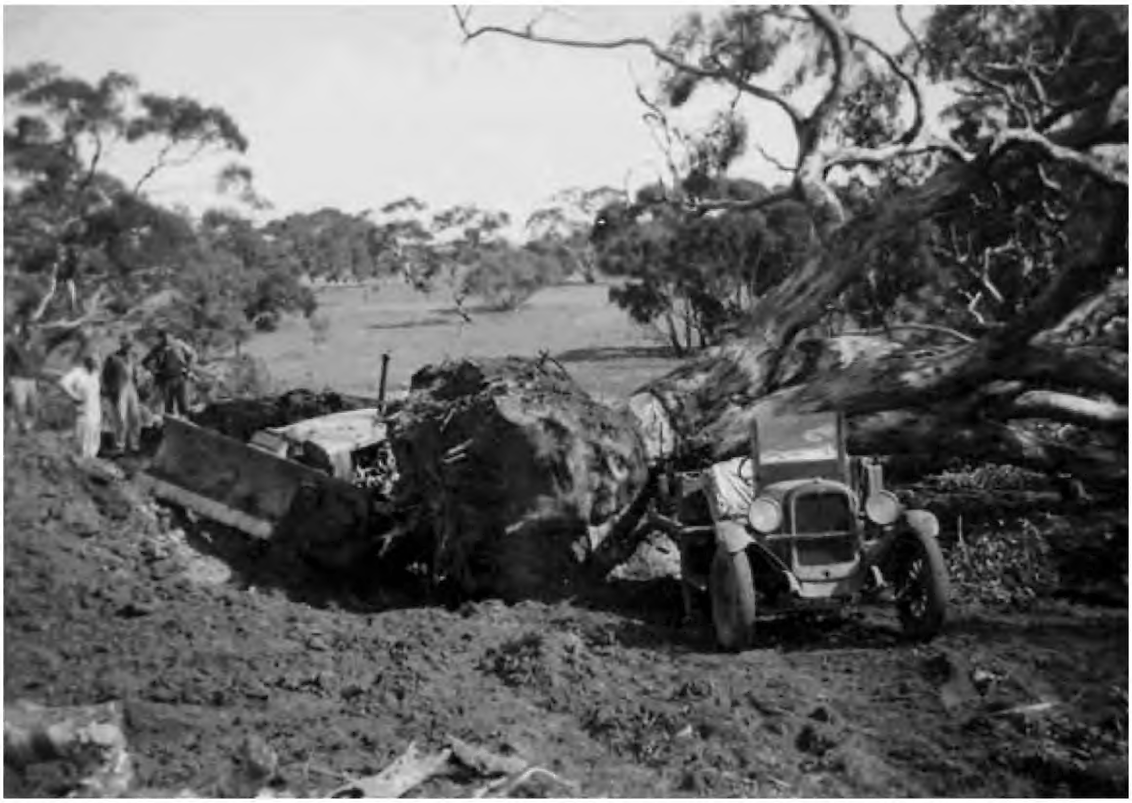


Figure 2. Post-war tree clearing using a bulldozer. Photo: Nicholls Family

People, passion and place: Biz's story

Elizabeth (Biz) Nicolson

Bonneys Plains, Tas. Email: biz@tazwild.com.au

I've read the definition of insanity—it is doing the same things over and over expecting a difficult result. I found this rather alarming as I have spent over 34 years beating the nature conservation drum, through demonstration, education and awareness categories, expecting a different result.

Recently, I have been knocking on the doors of businesses around Launceston. I've been asking them if they would be interested in landscaping their gardens with Tasmanian plants that would've grown on that particular site before it was developed. A guy from a very large company said this is a brilliant idea Biz, we would become a leader in green credentials, I agree with what you are saying, we are on the same page. However, there is a problem, biodiversity doesn't sell product. That's the bottom line. The capital investment doesn't make any business sense.

It was at that moment, I realized they are correct. I know that. It's just … I am still expecting a different result … I must be insane.

My Home

I might be insane but this is sanity—my home Bonneys Plains, one hour south-east of Launceston in the Macquarie South Esk catchment. This catchment has continuous intact native vegetation that contains the greatest diversity of native plants in Tasmania, the highest number of threatened species and the most mammal species in Temperate Australia. This district has remarkable grassy woodland, and its native pastures are converted into high quality superfine wool.

Bonneys Plains covers 5000 ha and has been in the Nicolson family for over 70 years. The property is 70% native vegetation (a grassy woodland), with an annual rainfall of 500 mm (that over the last three years has been 325 mm). The property runs 9000 fine wool merinos but due to drought conditions we presently run 6000 sheep. The arable land grows dryland wheat, oats, canola and poppies.

We have 13.5 km of river frontage to the South Esk River and the property is dissected by Buffalo Brook which cut a new course after the 1929 floods and became an actively eroding ditch. We fenced both sides starting in 1986 and left it to revegetate. We are now getting back to perhaps where it should be.

Native Plants, our Passion

We have been growing Tasmanian native plants for over 30 years, firstly for our own use and then supplying other farmers and later the nursery trade. I thought if I could show people how beautiful our plants were they would want to get to know them, appreciate their beauty and protect them. One of the plants we grew when we first started was the South Esk Pine. Knowing it was so rare I thought it wise to grow as many as possible, as one fire would wipe out the small population along the South Esk River which is almost entirely on Bonneys Plains.

I decided to grow them in their thousands and get them planted onto as many properties along the South Esk and as many home gardens as possible. I wanted a world without threatened species, and I try to grow as many other threatened species as I can.

A Perfect Business Outcome?

South Esk River Dam

Our catchment has had an extended dry period for 22 years and severe drought conditions for three years. The global financial situation and uncertainty in our export markets have had their toll on farmers and we have all been wishing for an abundance of water … but you have to be careful what you wish for.

In an office somewhere in Hobart there is a proposal to put a dam on the South Esk River, holding 200,000 megalitres.

Part of Biz and Lindsay's property that has been managed for conservation and biodiversity. Photo: Biz Nicolson

Biz and Lindsay sitting on the banks of the now restored Buffalo Brook. Photo: Nicolson Family

On a piece of paper this makes perfect sense. This proposal would not only benefit the farmers along the South Esk River but the water can be piped to the adjacent Macquarie River and benefit those farmers. The Primary Industries Minister has proudly announced that the greatest nature conservation area of Tasmania is going to be transformed into the food bowl of the nation.

The site of this dam is Bonneys Plains, just below our 55 acre river reserve, the only intact native vegetation on the lower reaches of the South Esk River and home to the South Esk Pine. Needless to say I have become a passionate advocate of the rare and threatened species legislation: after all, there are only a few of these South Esk Pines left!

Our Primary School

Our closest town is Avoca, situated where the St Pauls River meets the South Esk River. Avoca means 'waters meeting'. It's one of those towns that if you were travelling through and blinked, you would miss it, and if you didn't blink, then you probably wished you had.

The heart of our community is our primary school set on two hectares of beautiful and much loved gardens, a plexi-pave tennis court, a swimming pool, a hot house, vegie garden, orchard, a football oval, a well equipped playground and a principal's residence. Inside the buildings you would find everything in immaculate condition, from the carpeted classrooms to the computers and library. There are two teachers and a principal and our Grade 6 students are doing Grade 8 maths.

But this isn't what makes our primary school special—it's because it is a family. Our children don't know about locks, deadlocks and security alarms and they don't know about 'stranger danger' as they know every one in the community. Community is not something we can make happen, it happens over many generations of shared intimacy. Our children learn from the wealth and knowledge of the entire community. With so many keeping an eye out, the town supports a feeling of freedom and power in each child. They know where they belong. The Avoca community understands that the nuclear family is extremely important but not always practical. Extended families and the whole community is the basic building block for our society.

What our children know about the environment cannot be learnt in a book, nor learnt in classes. It's a knowing that comes from living with, participating with and noticing each hour, each day, each month and each year. It's a wisdom that's passed down from one generation to the next through our stories—stories that are about the old ways and the old knowing, and are related to where we live, how we live and the people who are part of our community.

But there is an office somewhere in Hobart that wants to close our school down. On a piece of paper it makes perfect sense. Bus our children to a district high school 30 minutes away, bigger classes, no extra staff required and the government can sell off the assets.

Valuing what's Important

I have come to understand that if we can't save Bonneys Plains from a mega dam, or save our South Esk Pine or the Avoca primary school, it's not their disappearance that's important.

What is important is that we have lost the level of consciousness that allows us to comprehend the importance of diversity and respect to the survival of the planet. If we don't understand the importance of this, nothing else matters.

What's happening in our Avoca community is a symptom of what is happening to our Australian society, our environment and more importantly to our value system. It allows us to reduce all that we value—our water, our land, our trees and our children—to a $ value.

However most members of our community have no economic value. If our fauna and flora cannot be fed, eaten or otherwise put to economic use, then they're considered to have no value. Yet they are members of our landscape community, and the landscape's stability and health depend on their survival.

In the absence of the sacred, everything is for sale and life has no value. It's assumed that anything important has a price. Trying to squeeze unseen values into a business model simply does not work.

Conclusion

Deciding what you would like written on your tombstone can become the motivator to implement your ideas. My Answer? *Biz Nicolson. A believer in nature conservation. Not insane.*

Habitat 141: evolution of the beast (Abstract)

Ron Dodds

Greening Australia, Horsham, Vic. Email: ron.dodds@bigpond.com

The idea of forming networks of patches of remnant vegetation has been around for quite a while. Western Victoria has been a stronghold, with Project Hindmarsh, Yarrilinks, Kowree Biolink and Cooboboonee to Kalingur to name a few. When The Wilderness Society travelled across western Victoria to meet the organisers of these projects to suggest that they be linked, it seemed to be an idea whose time had come. We have since created an alliance of eleven organisations into what is now known as Habitat 141. This project straddles the South Australian—Victorian border and runs from the coast as far north as Broken Hill. My talk outlined the background to Habitat 141.

Habitat 141: a people project

Andrew Bradey

Habitat 141 Coordinator, Edenhope, Vic. Email: abradey@gavic.org.au

Introduction

Habitat 141 is a large scale, long-term initiative managed by an alliance of over a dozen organisations, both government and non-government. It aims to safeguard the natural and associated agricultural areas of western Victoria, eastern South Australia and south-western New South Wales against a range of threats including climate change. It will do this by protecting and renovating important areas of native vegetation communities across the landscape on both public and private land.

The Habitat 141 area is as large as England plus half of Scotland, stretching from the coast to Broken Hill, and from Murray Bridge to the Grampians and to the Mungo Willandra area. It has many blocks of remnant vegetation, both large and small, many of which are in reserves or national parks. Between these blocks is farmland where the economy is based on primary production—agriculture, horticulture, forestry and grazing.

Three months ago I landed the job as Habitat 141 Co-ordinator. I was shown a map with green bits for reserves and national parks, and was told: "Your mission, should you choose to do it, is to fill in the gaps between the green bits." I gulped, said "Yeah, no worries." So I was handed a car, a computer, a mobile phone and a map.

The gaps I promised to fill in on the map are farms. Farms are owned and managed by farmers, so it is important to try to understand them and how they think, and how to excite them to join in this massive, crazy scheme to make it happen.

A team of Korean volunteers relaxes after fence building for Kowree Biolink. Photo: Sue Close

Farmers: some Sociological Analyses

Over the past few years there have been a number of sociological studies of farmers and their attitudes towards making land management changes and towards conservation on their farms. I know of four of these studies in my area alone. They all say the same thing: farmers aren't particularly worried by conservation issues and don't have the resources or skills to do anything about them.

I carried out a sociological study of my own outside the front gate of a farmer/shearer called Stewy. One overcast September afternoon I was outside Stewy's house, direct seeding trees and shrubs into a public laneway which linked a couple of wetlands. I knew a bit about Stewy: he had recently had a run-in with the DSE (Department of Sustainability and Environment) over some of their tree seedlings which his sheep had eaten. This altercation had taken place on land over which he had previously held a grazing licence. I also knew from Kenny, one of our shearers, that Stewy had taken too many drugs in his youth and that his brain was, well, compromised. Kenny refuses to shear in the same shed as Stewy, because he is so big and always itching for a fight.

I was about half way through my seeding job when I stopped to check the seed box, depth and gear, and heard a ute start up at Stewy's house. There was a hole in the muffler; the wheels were spinning. It was coming this way, and coming fast. Here we go!

The ute skidded to a halt next to me and my four-wheel bike and seeder. Luckily Stewy had his missus with him, so he didn't just pull out the shot-gun and blow my brains out. Maybe I could get out of here with just a few broken bones. He and the missus jumped out. "What do you think you are doing here?" A reasonable question; I might survive this yet. I said "Well, I'm just sowing some trees in this laneway."

"I hate trees."

"Fair enough, but this is a public lane, and the shire has given permission to do this work."

"My sheep need to get in that gateway there. I don't want trees clogging up this laneway."

"If I start the seeding just there would that be OK?"

"It had better be a fair bit further on than that. What trees are you planting? I can't stand those Bastard Gums, what do you call them?"

"I'm sowing a mix of trees and shrubs to link the School Swamp with that salty lake over there. Have a look at the seed I'm using."

Stewy drops his arms, leans forward and has a good look. GOT HIM. All farmers are hooked on growing things. The laneway is now a forest.

Kowree Biolink: a People Project

Consistent with the results of this rigorous sociological study, the Kowree Farm Tree Group based in Edenhope in the south-west Wimmera set up and ran a project called Kowree Biolink. The project ran for four years over an area of about a thousand square kilometres and linked the Little Desert with the Glenelg River. It involved about 70 farmers, all of whom contributed an average of $5,000 each towards the conservation work done on their farms.

The 'Grand Tour' of Kowree Biolink 2002. Photo: Sue Close

Over four years we conserved 900 hectares or approximately one per cent of the landscape. This was definitely a people project. Work was done by farmers, volunteers, school groups and local contractors. We did plenty of showing off and celebrating our activities. We staged a horse ride from the top to the bottom of the Biolink, and held barbeques and dinners to celebrate the success of the project. There were a number of extremely popular bus trips, with many farmers wanting to see what their friends and neighbours were up to.

Farmers were attracted to the Kowree Biolink because it was big, bold, well run, seen as successful, would improve their farm, was flexible and would accommodate their needs.

The facilitator drove a bomb. No logo, no business card, no lap-top, no barriers. Plans were made in the ute and the deal was signed and sealed at the boundary gate. No site was ever left half done—100% success was the benchmark, no matter what the recurring cost.

Conclusion

Kowree Biolink is not an aberration. Project Hindmarsh is happening 100 kilometres to the north east. It is bigger, ran for longer, has won numerous prizes and is famous for its massive planting weekends. Yarri-links has been cruising along for years. With lots of farmer involvement and a prize or two, it now pulls in busloads of refugees and others to their community planting weekends.

Can we take the lessons learned from Kowree Biolink and the numerous other successful projects and apply them to a project 200 times as large? Yeah, no worries, but for God's sake, on your way out remember to shut the bloody gate.

Protecting Swamp Sheoke: an endangered species of Victoria's Wimmera Woodlands

Adam Blake

Trust for Nature—Wimmera, Longerenong, Vic. Email: adamb@tfn.org.au

Background

Trust for Nature (Victoria) has been active in recent years targeting vegetation types that traditional instruments of permanent protection (including the National Reserve System) have struggled to access, secure or significantly restore. Historically the factor determining what was or wasn't preserved was the real and perceived value and suitability of the land for production, much as it is today.

This has resulted in a trend of choosing to protect or not to protect based largely on soil type. The pattern that has inevitably emerged is one where there is now an over-representation of certain EVC's (Ecological Vegetation Classes) protected on public and private land. Historically, this has been at the expense of other EVC's which have made way for agricultural production and other forms of development. This pattern of over- and under-representation of vegetation types is well illustrated in the Wimmera Region of western and north-western Victoria.

The Bio Conservation Status of these EVC's now reflects this worrying historic pattern. Vegetation types traditionally protected voluntarily on a large scale on private land, have been those on poor, sandy or skeletal soils. Equally there has been less protection of Plains Woodlands, Plains Grassy Woodland, Shallow Sands Woodlands, Plains Savannah, Low Rises Woodland and other vegetation types that occur across the more arable parts of the region on deeper, more fertile soils.

*Woodland with Swamp Sheoke representing a secondary tree layer below Grey Box (*Eucalyptus microcarpa*) trees. Photo: Adam Blake*

To complete the pattern, these same vegetation types occur in only very small amounts in public reserves, having been overlooked for reservation originally in favour of mountainous, forested and less arable land. Required now is an accelerated effort to protect and restore the best of what remains of the woodlands on private land and the various endangered EVC's they comprise. There is much less now to protect, what remains is largely fragmented and the threats upon these ecosystems is, without any long-term security, greater than ever.

Casuarina obesa

Casuarina obesa (Swamp Sheoke) has endangered species status in Victoria and is listed as threatened in the state under the *Flora and Fauna Guarantee Act 1988* (Vic.). Only nine known populations of this species occur in Victoria, eight of them found in central parts of the Wimmera region, west of Horsham. It also occurs naturally in south-west Western Australia where it occupies a greater range, in places being common. There is also one known population in south-west New South Wales.

All of the nine extant Victorian populations occur on private land and none occurs in a conservation reserve—a situation typical of other species on the agricultural Wimmera plains. But there is another set of obstacles to confront if protection is to result in the short- and long-term conservation of this species. Research previously conducted indicates the extant, isolated populations in the Wimmera are unisexual. This presents a problem for a wind pollinated species, occurrences of which are separated by several kilometres. It is therefore clear that permanent protection and rehabilitation is only a first (but fundamental) step in conservation of the species. Because specimens from the Wimmera populations are known to show considerable variability, this makes protection even more urgent if we're to discover more about this little known member of the *Casuarinaceae* family.

Recently in the Wimmera, using GIS technology and by engaging with the landholder, a large population covering about 30 ha and representing thousands of specimens was 're-discovered', for years known only to family members and more recently Trust for Nature staff. It hasn't yet been established whether or not it is one of the aforementioned eight Victorian recorded occurrences. If so, it is possibly the largest, and potentially the healthiest and least fragmented. It remains largely unmodified as previous care and threat abatement activities by the landholder had preserved habitat quality. Light grazing had kept the grassy ground cover open and diverse, hardly reducing total cover in the areas providing habitat.

Structurally Swamp Sheoke provides the middle layer of small trees in the vegetation, in some places densely beneath an open canopy of (in this case) Grey Box (*Eucalyptus microcarpa*) and Black Box (*E. largiflorens*) trees. It grows on heavy soils at a location slightly higher than, but fringing, a seasonally inundated area. Preliminary bird surveys have turned up a number of important temperate woodland birds indicating a level of ecological function. These include Jacky Winter, White-browed Babbler, Diamond Firetail, Southern Whiteface and Brown Treecreeper. Now protected on a 90 ha Trust for Nature Covenant, itself connecting a large core area of public land, this represents the first Swamp Sheoke population to be permanently protected on land title.

Protection with a Conservation Covenant

One of the stated objectives in the Action Statement for this species (Walker 2003) is to protect existing populations from threatening processes and encourage natural regeneration. Another long-term objective is to ensure that single sex sites contain at least 100 plants of the opposite sex by 2010. It is hoped that with the long-term security of a covenant in place, this can be achieved at this newly protected site (if this population proves to be unisexual). Fencing of the area is the first task to be undertaken. This will allow the immediate cessation of grazing for an extended period of time and the more controlled use of grazing in the covenant for conservation purposes over time.

Increasing Habitat Extent

In an effort to target areas where net gain opportunities of endangered vegetation types occur, Trust for Nature collaborated with Greening Australia. Those areas only lightly modified with grazing and with reasonable tree density are seen as areas that could cost-effectively be restored for conservation, particularly if they met other key conservation significance criteria. It is critical that opportunities to increase the total extent of some habitat are sought if more ecological balance is to complement and be integrated into protected areas.

Restoration of this Swamp Sheoke community will be achieved with approximately 10 ha of revegetation by Greening Australia in areas previously modified by grazing. Incentives are being provided by Trust for Nature to the landholder as part of a Victorian Government funded Department of Sustainability and Environment / Trust for Nature statewide project, ensuring the permanent protection and ongoing management of this and other significant habitat. These actions will help the Swamp Sheoke and also benefit a range of other significant species, for example the endangered Red-tailed Black-Cockatoo (also listed under the *Flora and Fauna Guarantee Act 1988*), which this covenant assists by its position, and by providing habitat and both of the cockatoo's two critical food trees.

Conclusion

Trust for Nature plans to build upon these partnerships in order to protect more endangered habitat. Identifying and protecting the most valuable remaining vegetation in the endangered category is fundamental to a landscape scale vision such as Habitat 141[1], a project that plans to restore ecological function across a large area of temperate Australia from the ocean to the outback, south to north through western Victoria.

Reference

Walker, I. (2003). *Action Statement No.133 Swamp Sheoke* Casuarina obesa. Department of Sustainability and Environment, Melbourne.

---

[1] See also preceding article by Andrew Bradey in this issue

---

Conservation covenants: why bother?

Rosalind Bradey

Farmer, Edenhope, Vic. Email: atbradey@gmail.com

Introduction

My husband and I commenced sheep farming at Ullswater near Edenhope 25 years ago. Our farm is fairly typical of most in the area in that it contains a wide range of soil types and vegetation ranging from poorly drained swamps to sand hills with loamy red gum flats in between.

One of the farm's main attractions at the time of purchase was its relatively cheap price, as it was fairly run down. It took us a while to realise what a fantastic diversity of fauna and flora existed in the area we had moved to. At that time and until about 10 years ago there were many permanent and semi-permanent wetlands in the area, and these, combined with the ephemeral wetlands, the stringybark forests and patches of Buloke and Red Gum woodlands supported a vast wealth of fauna and birds in particular.

Over the first few years at Ullswater, we gradually fenced out many small areas of remnant vegetation which we fondly referred to as our national parks. We didn't actually own any very large areas of wetland or remnant forest, but were lucky enough to have the benefit of extensive areas of crown land stringybark forests and wetlands adjoining our property.

Covenant: 1990

In 1989 we were delighted to be able to buy another 120 ha of land adjacent to our farm when one of our elderly neighbours sold up. This block consisted of several Red Gum paddocks which drained into a 30 ha wetland known locally as Clear Swamp. Most of the red gums around the swamp had either been ring-barked many years earlier or more recently been cut down for sleepers, and the swamp itself had been regularly grazed by sheep. Depending on your point of view, it was either a depressing bit of wasteland or a renovator's delight!

Being rather stretched financially at the time, we jumped at the suggestion made by Rod Safstrom of the Victorian Conservation Trust that we put a covenant on the swamp and be reimbursed to fence it out. We had already planned to exclude sheep and any assistance we could get was very welcome.

Covenants were a new scheme in 1990, and ours was apparently the first wetland to be protected. Shortly after taking it over we fenced it out with the help of some Melbourne friends who were keen to do some hands-on conservation work.

In the spring of 1990 we sowed local tree seed around the banks of the swamp with good results. We also had a lot of self sown gums come up along the receding water line that year.

It has been a great pleasure over the years to watch the transformation of the wetland and to see the abundant bird and animal life it supports. Now that the wetlands in our area are so much drier than they were ten years ago, it is especially good to know that no future owner could decide to plough it up for cropping. This is something we are increasingly seeing around the south west Wimmera of late and it is a major threat to wetland flora and fauna.

Covenant: 2009

Last week Andrew and I signed up for our second covenant. The organisation is now named The Trust for Nature. This is 40 ha on another block of land we bought seven years ago. The block is 240 ha and a mix of sandy rises running down to Buloke woodlands and shallow wetland. It has stringybark forest on one side and *Eucalyptus leucoxylon* and Buloke forest in crown land on the other.

The wide belt of remnant vegetation which winds through the middle of our farmland is definitely an important wildlife corridor. It is also rather unusual in a covenant in that it includes all of the soil and vegetation types in the district, from sand hills with stringybark forest to soggy Buloke marshland. Once again we are keen to be assured that the covenant will mean that any future owner won't be able to graze, clear or cultivate the area.

Top: Brolgas frequently nest in Clear Swamp. Photo: Michael Bradey
Bottom: Rosalind Bradey admires her latest covenant of grassy woodland. Photo: Andrew Bradey

Conclusion

Our experience in the 2006 drought was that it was a constant battle to keep hungry sheep and cattle out of our conservation areas. Having any future owner compelled to keep wandering stock out, as well as being unable to cultivate these covenanted areas is an especially reassuring idea. It is also something we are much more concerned about now that old age is getting closer than twenty years ago.

We have put a lot of effort into both of these covenanted areas, and have derived enormous satisfaction from them as they improve year by year. It is great to know that they are protected well into the future, and we thank Trust for Nature for organising that legal protection.

How can ecosystem function be placed at the heart of regional biodiversity conservation projects?

Paul Foreman

Bush Heritage Australia, Melbourne Vic. Email: pforeman@bushheritage.org.au

Introduction

The latest analysis of Australia's threatened plants indicates a biodiversity crisis unfolding in slow motion (Figure 1). Similar trends exist for most, if not all other elements of the biota and alarmingly this trend is expected to be sped up by (human-forced) climate change.

Whilst in some respects the investments in species recovery projects has prevented extinctions, these successes have to be placed in the context of the cost and sustainability of recovery programs and the steady growth of the list of threatened plants. This 'triage' approach has long been criticised as not addressing the processes of extinction, and that the species that are secure, declining, rare or unknown today become the threatened and extinct species of tomorrow. In other words, we are not addressing the root causes of decline.

Ecological Processes

In recent times there has been a welcome increase in use of the language of ecological processes and ecosystem services in the public domain. However it remains an illusive and complex concept which is challenging to define. A number of good overviews have been published recently, two of which are compared in Table 1. While broadly similar, they differ in their specificity and scope.

How does one see 'natural disturbance regimes' for example, let alone measure it and actively manage it? Faced with the considerable challenge of putting ecological processes into practice, it is easy to see why we are more comfortable with the simpler and more familiar notion of asset management. Populations, species, parks, and vegetation communities are all things we can see, feel and connect with, and can manage within the constraints of the *status quo*.

In recent years Bush Heritage has been reviewing how priority properties are identified and selected, because in this business 'not just any old property, not just any old hectares will do!' (Table 2).

As you would expect, threatened species and representation in the National Reserve System (NRS) are included, but most goals relate to ecological processes. Ecological 'source areas' is a concept that sheds some light on the notion of healthy landscapes.

Source areas have reliable soil water and high fertility; they support vegetation that produces larger quantities of biomass and detritus and are places where nutrients accumulate. Contrasting areas (usually uplands) have more sclerophyllous vegetation with lower nutrients, higher levels of anti-herbivore compounds, and are least buffered against seasonal or climatic variation. A useful way of pin-pointing source areas is an index derived from satellite data called Rain Use Efficiency (RUE). This is a spatio-temporal index that effectively looks for areas that have high and stable productivity profiles.

It is axiomatic that productive land is being preferentially cleared and degraded by land use activities, and is the overlying reason why many species are threatened and declining. With some notable exceptions, there is a strong relationship between the degree of threat and the degree of development.

This contributes to less resilient landscapes, i.e. that are less able to 'bounce back' from disturbances such as fire and drought. All species perform roles that maintain emergent characteristics such as ecosystem resilience. The long-term persistence of biodiversity depends on maintaining ecologically functional landscapes that, among other things, help avert future extinctions (Mackey *et al.* 2007). Optimising resilience is also practically sensible because it is the on-going conservation management and restoration costs that demand the most resources.

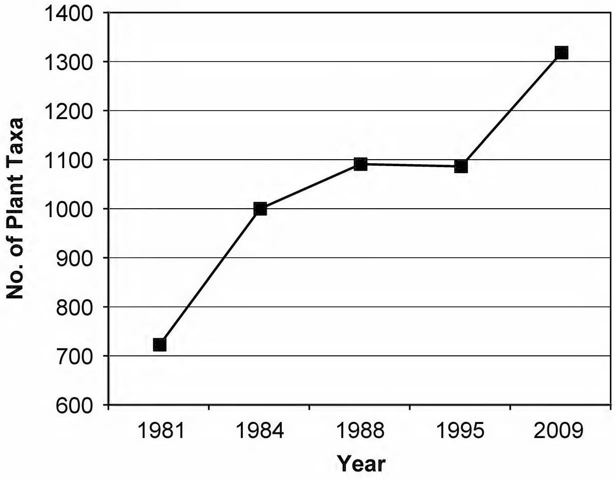


Figure 1. Extinct and endangered Australian plants. Source: Department of the Environment, Heritage, Water and the Arts website, April 2009.

Table 1. Two examples of 'Ecological Process' themes.

McGregor *et al.* (2008) – Victoria Naturally Alliance	**Soulé *et al.* (2004) and Mackey (2007) – The Wilderness Society (Wildcountry)**
1. Hydrological processes	1. Hydro-ecological relations between ground water, surface water, vegetation and animal habitat
2. Movements of animals and seeds	2. The habitat requirements of dispersive fauna (particularly birds)
3. Interactions between species	3. Trophic interactions involving meso-predators (especially dingos, foxes, cats)
4. Landsystem productivity	4. Primary productivity regimes
5. Natural disturbance regimes	5. Ecological fire regimes
6. Spatially dependent evolutionary processes	6. Spatially dependent evolutionary processes
7. Climatic processes	7. Potential impacts of global climate change
8. Creation of biophysical habitats	
9. Coastal zone fluxes	

Table 2. Bush Heritage property prioritisation framework (Mackey et al. 2008a, b).

Six key goals:
• High species richness/endemism or presence of nationally threatened species and communities (functionally viable populations and assemblages)
• High functional integrity (least modified condition—vegetation; relatively weed-free)
• Large property parcels, often linked to existing protected area network
• Least protected ecological types
• Contribute to mitigating current and future threats to Australian biodiversity
• Ecological 'source areas' (can also be drought refugia for mobile fauna)

Recommendations

Many have said that the often tiny remnants of agricultural landscapes are ecologically doomed. They have used this assumption to justify a form of 'biodiversity triage'. As a rule, the small, often isolated remnants in our paddocks, along roadsides, unused roads, in town commons, cemeteries and along drainage lines etc. are ecologically dysfunctional—even dead—and will slowly/quickly disappear (along with their threatened species) if essential ecological processes are not revivified.

If we wish to halt species loss we are faced with no bigger task than to breathe the 'ecological life' back into entire landscapes. But how do we actually do this? A few principles and suggestions based in part on the Bush Heritage experience might assist.

1. Your understanding of ecological processes (especially how they operate in your area/region) must underpin everything you do and may require a re-evaluation of your structure, approach and priorities.
2. There is a lot of useful innovation around spatial surrogates (i.e. indicators) so you can 'see' ecological processes more easily (especially using satellite technology).
3. Regional partnerships around sound landscape-scale, multi-tenure conservation projects are critical and essential.
4. You must set ecological outcomes as your key performance indicators.

References

Mackey, B. (2007). Climate change, connectivity & biodiversity conservation: lessons from Australia. In M. Taylor & P. Figgis (eds), *Protected Areas: buffering nature against climate change*. Proceedings of the WWF Australia and IUCN World Protected Areas Commission symposium, Canberra, 18-19 June, 2007, pp. 90-96.

Mackey, B., Gilmore, S., Pringle, H., Foreman, P., van Bommel, L. and Haseler, M. (2008a). *BioPrEP—an approach to conservation land assessment for Bush Heritage Australia, Part I. Conceptual Framework*. Unpublished Report, Bush Heritage Australia. Melbourne.

Mackey, B., van Bommel, L., Gilmore, S., Foreman, P. and Berry, S. (2008b). *BioPrEP—an approach to conservation land assessment for Bush Heritage Australia, Part II. Case Study Results*. Unpublished Report, Bush Heritage Australia. Melbourne.

McGregor, A., Coffey, B., Deutsch, C., Westcott, G. and Robinson, J. (2008). *Ecological processes in Victoria: policy priorities for sustaining biodiversity*. A discussion paper prepared for the Victoria Naturally Alliance, Melbourne, available at <http://www.victorianaturally.org.au/documents/file/Ecological_Processes.pdf>.

Soulé, M.E., Mackey, B.G., Recher, H.F., Williams, J.E, Woinarski, J.C.Z., Driscoll, D., Dennison, W.C. and Jones, M.E. (2004). The role of connectivity in Australian conservation. *Pacific Conservation Biology* 10: 266-79.

Minding our own biodiversity: protect and produce

Lanie Pearce

Nathalia and District Local Area Plan Coordinator, Picola, Vic. Email: pearcepl@activ8.net.au

My Background

I am a mother of three, a wife (to a Wongatapan man) and a farmer of 30 years. I am the Local Area Plan coordinator for Nathalia and district, a member of the Broken-Boosey Conservation Management Network (CMN) and state-wide advisory group, a member of the Goulburn Murray Landcare Network, Waterways Working Group, Superb Parrot Project, Broken Creek Improvement Landcare Group, and I'm aligned with various other groups with environmental interests. I am the company secretary of the Nathalia Community Bank and Numurkah branch. I attend a 'first Tuesday Book Club', play Thursday morning tennis, am a member of the Picola District Improvement Group, the Nathalia Economic Development Project and the Barmah Social Club. I belong in the community. I have found a place to be comfortable. BUT—on my headstone it will still read "*She* married Peter Pearce".

We own just over 250 ha near Barmah. We have a home farm of about 57 ha of irrigation (supposedly) on the Broken Creek, and a dry farm of 73 ha with a one megalitre stock water-right. We also have a 44 ha Murray River block, and a 77 ha Deep Creek block.

Our main enterprise is fattening beef cattle, and we grow our own crops for hay and grain. We have fenced our creek frontages, have off-stream watering points, developed a whole farm plan, and have planted shelter belts and an enormous number of trees, shrubs and other plants. We did most of this before it became 'fashionable'. Pete's family have been looking after the property for the past 85 years. It is not just a productive farm, it is also our responsibility to look after the land. We are the custodians of our land.

We have Local Knowledge

Different people carry out surveys/studies in our area, often with no local input. Yet local people have an abundance of knowledge about the flora and fauna of the area. They are the people out there every day, every season and every cycle.

What you call a Weeping Pittosporum, or a Prostrate *Eutaxia* or an *Eremophila*, we call the Egg and Bacon, the Native Apricot or the Emu Bush. We have Leafy *Templetonia* on our property—it has always been there, just ask us. We know where the Babblers, Goannas and the Superb Parrots are. My mate Stewie absolutely loves peppercorn trees. He is also the landholder who has the largest number of Superb Parrot plantations in the district.

Local knowledge can be a useful tool. We are the locals. We know our area. Have the facts before condemning landholders. We are willing to help if we can (although like everyone, we have restraints—time, finances, burn out, climate/drought, and perceptions of being too green/not green enough).

Our Involvement in the Broken-Boosey CMN

I love being involved in the Broken-Boosey CMN—the members are my 'broke and boosey friends'. I became involved because it's my backyard. Our home farm is on the Broken Creek at the far end of the Broken-Boosey State Park and Natural Features Reserve. We needed representation from our end of the CMN. Every group needs to have a diversity of opinions. We may not always agree, but at least you will be heard!

The CMN is a forum where most of the agencies are represented, community members are in equal or larger balance and everyone is respected and listened to. I can put the ideas, problems and accolades from the community to the people who are making decisions and operating work crews in our area. I have a chance to let others know what we are up against—financially, emotionally and historically. Sometimes the community feel that the reasoning behind past decisions and practices is forgotten. This is an opportunity to explain why things happen in certain ways in certain areas.

Variety and subtle education is a by-product of our CMN meetings. Some of the things we have operating in our area are:

- a fox baiting program
- a calendar (featuring biodiversity from our photographic competition)
- Biodiversity Celebration Day
- weed booklets
- biodiversity handbooks
- a local bird identification book
- excursions to places of interest
- Nathalia By Night
- Bats and Frogs night at Barmah
- Plastic Bag Free day for Nathalia township
- Wetland Walkabout
- Education Packages.

Nathalia Secondary College environment day. Photo: Lanie Pearce

Education Packages

The education day packages, which are a passion of mine, are co-ordinated by the Local Area Plan committee. Small groups of students rotate through sessions being conducted by an assortment of presenters from the Broken-Boosey CMN, the Department of Sustainability and Environment, the Department of Primary Industries, Goulburn Murray Water, Parks Victoria, Landcare groups, the Superb Parrot Project, the Nathalia Tree Group, local historians and the local Indigenous education officers. Funding is through Education and Awareness Grants, the Goulburn Murray Landcare Network and the Broken-Boosey CMN. However, most of the time given is voluntary.

Our first effort was a 'Wet, Wild and Wasted' day. We were so excited we printed bags for the day! We now have 10 timetables with activities to suit each year level from Prep to Year 9. Year 10 students prefer to have targeted guest speakers, and we are the contact for this. Year 11 has a yearly biology field trip which we have attended and assisted at for the past four years. It is amazing how keen people are to help and how much the kids appreciate that most are local and are giving their time for free. I flog the department people and abuse friendships atrociously.

We didn't invent most of the activities—they have been sourced from all sorts of educational sites and people. We have invented a few activities, but see no point in re-inventing the wheel. The activities are in a user-friendly format modified to fit into 20 minute rotations.

The packages are a generic set of activities designed and planned with teachers to fulfil part of the curriculum, not just a one-off day activity. We are an integral part of the schools in our area and are usually their first point of call for information (not agencies or departments). We have constant queries regarding the packages and though we try, it is not possible to help everyone. Even though it is a proven success, we are hampered by time, and so little funding. I could do this full time, but it would be financially impossible. It would send me broke!

Conclusion

If you have a cause, you need to find a champion for it. It's OK to make policy, but somehow you have to transfer that to an action. The education packages are enhancing work already done and getting more knowledge out there.

Contrary to what a lot of media perpetuates, country people really do care about environmental 'issues'. You just need to listen to what information/actions people want and respond. Every vision/proposal has to be in a format that people like me, a farmer, understand and can execute. This is the way to share the knowledge we all have.

I am speaking for, and to, my neighbours—not a department or a foundation or an organisation. We are very busy 'minding our own biodiversity'. We do it on a daily basis. We have to. To remain productive, we also need to be protective. Don't tell us what we are doing wrong. Tell us what we are doing right and we will build on that!

A ‘bottom up’ approach to landscape restoration

Elizabeth (Beth) Mellick[1], Julia Brown[2] and Marie Jones[3]

[1]The Norman Wettenhall Foundation, Castlemaine, Vic. Email: beth@nwf.org.au
[2]Connecting Country, Castlemaine, Vic.
[3]Connecting Country, Chewton, Vic.

Introduction

The Norman Wettenhall Foundation is a philanthropic trust and environment group. Its main focus is to support the conservation of Australian flora and fauna.

There are three current funding areas: Foundation Grants which cover all of Australia, Landscape Restoration Grants which are for projects in south-east Australia, and Landscape Restoration Fellowships (south-east Australia). Details of all can be found on our website <www.nwf.org.au>.

Landscape Restoration

The landscape restoration grants are relatively new for the Foundation, and the focus is on the restoration, rehabilitation and resilience of agricultural landscapes in south-east Australia.

The Foundation sets out to identify potential areas and their communities that would benefit from ‘bottom up’ landscape restoration projects. The premise is that large-scale landscape restoration requires working with the people who live within that landscape, adopting a whole-of-landscape approach, bringing together all sectors in the community. To do otherwise is to court failure. Where any one sector is excluded, or one group dominates in the decision-making process, the approach will fail the whole-of-landscape test. It will be as fragmented as the environments within which we live today.

The Foundation is committed to vision-building from the bottom up, which we believe involves the following prerequisites:

- forming partnerships that are as inclusive as possible of all the stakeholders involved in that particular environmental patch;
- basing solutions on sound scientific knowledge;
- undertaking community capacity-building to improve skills and knowledge;
- finding ways to build community resilience so people can continue to live within landscapes without exploiting them; and
- establishing monitoring processes so the group can review strategies and adapt where necessary.

As a small Foundation, funds are limited and must be used strategically. Therefore, the aim has been to support the building blocks of projects (workers, administration, educational resources) to allow them to establish a strong community structure.

Local farmer and Connecting Country Reference Group member Malcolm Fyffe on his property. Photo: Julie von Platen

Connecting Country Project

The Connecting Country project in Central Victoria is an excellent example of the ‘bottom up’ approach to landscape restoration that The Norman Wettenhall Foundation is proud to support. The overall aim of the project is to connect people and landscapes for the management of a healthy, productive and resilient natural environment. The Foundation approached the Friends of the Box-Ironbark Forest group to see if there would be enough interest in the Castlemaine and surrounding areas for a landscape-scale restoration project.

In the Mount Alexander area there is indeed a passion for, and interest in, all things environmental. The region has more than 30 Landcare and environmental groups, with 168 Land for Wildlife properties and 44 properties with Trust for Nature covenants. The Foundation, therefore, provided the start up funding for this venture.

The project has been running now for just under two years. The first step for Connecting Country was to establish a Reference Group, and this drives and guides the project. This group consists of around 20 representatives from various environmental, Landcare and community groups. Representatives from government agencies provide another level of expertise to the group.

Connecting Country Activities

The project team, supported by a project officer, has collected information about conservation works on private land and married that information with the existing data about works on public land. The combined data has provided the material for the *Biodiversity Blueprint*, a document that shows the environmental assets of the region, as well as community-identified potential on-ground works projects.

The project team has also developed a website (<www.connectingcountry.org.au>) that provides up to date information to the community through a news and events blog, and has the blueprint maps and other data available. It also includes an interactive mapping tool service that provides a unique way for landholders and the community to engage in the project and connect with other people interested in conservation activities about indigenous flora and fauna of the region.

A recent innovation was to ask people across the area to record the sightings of the Brush-tailed Phascogale. This community mapping has been used in conjunction with official departmental records to identify where possible on-ground works should be done to improve both condition and connectivity of habitat to try and prevent further decline of this endangered species.

There is no large bio-link from 'A' to 'B' in this project, but rather a whole host of connectivity projects across the landscape involving a wide range of people. If there is the capacity of the community to restore the landscape, then restoration efforts stand a good chance of success, and Connecting Country will help to link everything together.

The project is now preparing to move into its next stage that involves 'ground-truthing' the potential projects identified in the *Biodiversity Blueprint*. These projects need to be further developed so that they are practical, viable, meet specific aims, and are fully costed. They will be of varying sizes in order to meet these aims, and will then be ready to look at appropriate funding opportunities. The project is also part of the North Central Catchment Management Authority's bid for funding under the Federal and State governments' investment programs. The bid is based on preventing the further decline of the Brush-tailed Phascogale across this area.

Conclusion

As a community-driven project, the lengthy process of establishing the Reference Group, of producing the Blueprint, and of generally engaging the community has been of fundamental importance to the 'bottom up' approach that The Norman Wettenhall Foundation was seeking to support. How effective it will be in creating habitat connectivity and further community engagement is yet to be seen, so stay tuned.

Community planning session. Photo: Julie von Platen

The role of markets in conservation: the opportunities and constraints for landholders in the uptake of market-based instruments (Abstract)

Ken Moore

Land and Water Australia, Braddon, ACT. Email: ken.moore@lwa.gov.au

The development of markets for native vegetation and market-based instruments (MBIs) potentially offer landholders another source of income. The past two decades has seen a significant increase in the interest of potential buyers and sellers of environmental goods and services including conservation of native vegetation and biodiversity. This has resulted in the gradual development of instruments (e.g. conservation tenders/auctions) and institutional arrangements (e.g. legislation) for encouraging and facilitating trade in these services. Most media attention has been on the development of water and carbon markets. However, markets and market-based instruments for the conservation of native vegetation and biodiversity, particularly at the regional, catchment and local levels, have been successfully evolving without the fanfare associated with other natural resources.

This presentation demonstrated how Land and Water Australia has been investing in research, communication and adoption activities to encourage the development of native vegetation and biodiversity of market-based instruments. It explained the role of markets, what market-based instruments are, and provided case examples of where they have been successfully implemented. It also identified research findings on ways to improve the design and delivery of MBIs and incentive programs to increase the participation of landholders.

Growing private land biodiversity in Victoria: the potential role of market-based instruments (Abstract)

James Todd

Department of Sustainability and Environment, East Melbourne. Email: james.todd@dse.vic.gov.au

The use of market-like approaches to achieve biodiversity outcomes on private land is a developing area in Victoria. Due to the fact that traditional commodity markets have been a large contributor to environmental decline across the globe, many people are rightly sceptical about the application of markets to achieve biodiversity outcomes. The limited application of market-based projects in Victoria and the modest level of investment allocated to such projects in comparison to more ‘traditional’ incentive programs means that few landholders, natural resources managers and policy makers have been directly exposed to the ideas underpinning their design and on-ground delivery. This presentation explained the basis for the Department of Sustainability and Environment’s interest in market-based instruments and biodiversity conservation on private land. It helped clarify what market-based instruments are, using various Victorian examples, and identified the potential role that such instruments may play in the future.

Victoria's Plains Tender: a farmer's experience

Neville Oddie

'Chepstowe', Snake Valley, Vic. Email: nevoddie@netconnect.com.au

Introduction

My family first came as settlers to Chepstowe, part of the Victorian Volcanic Plains about 35 km west of Ballarat, in about 1858. The area was being closely settled by families moving on from their (often very difficult) experience on the Ballarat goldfields. The effect of this settlement was to confirm the dispossession of the local Beerekwart clan of the Wadawurrung people.

A further effect was the systematic removal of the tree and shrub layers in what had been primarily an open grassy woodland landscape, dominated by Yarra Gum (*Eucalyptus yarraensis*), Blackwood (*Acacia melanoxylon*), Silver Banksia (*Banksia marginata*) and Drooping She-oak (*Allocasuarina verticillata*). The grass and herb layer remained to a large extent intact until some parts of the land were cropped, fertilised and more heavily grazed.

The farm now totals 650 ha and is used primarily for grazing sheep for wool and meat. Since I became the owner/manager in 1980, I have leased parts of it for blue-gum production and for cropping. I have been careful to ensure that only those areas of the farm that did not carry remnant vegetation would be used for these purposes.

As a result of exploring aspects of Indigenous culture and wisdom, I have become more capable of seeing the land with 'different eyes'—to imagine country as it might have been before white settlement. About 1990, I decided to remove livestock from a non-productive area of the farm to see what would happen. This area was always bare because my sheep chose to heavily graze it continuously. Otherwise, it had never been cropped or fertilised.

The result was beyond my imagination. Native grasses regrew vigorously and wildflowers began to appear—not all in one year, but over many years. Even today I will often find something new I have not seen before. With each species that has appeared I have felt the pleasure experienced on the return of an old friend. Since then I have felt the personal responsibility to act as a pro-active custodian for all the grassland and other native vegetation remnants on this farm.

Victorian Volcanic Plains Tender initiative

In 2004, I became aware that the Corangamite Catchment Authority, based in Colac, had secured funding to conduct an incentive scheme to assist farmers with remnant native grassland areas to manage those areas appropriately and sustainably, leading to long-term protection. Since I was already committed to conservation of my remnant areas, the Victorian Volcanic Plains Tender initiative (as it was known) seemed like a wonderful opportunity to secure some financial assistance to carry out work I was already doing on some areas, and expand that activity to new parts of the farm. I saw multiple benefits in being involved with this initiative—particularly crucial financial support for the farm business at a time of widespread drought and financial downturn.

Parts of the farm managed under Plains Tender.
*Top: remnant stony rise shrubs (*Melicytus dentatus*, previously called *Hymenanthera dentata*) and riparian *Poa *tussock grassland. Bottom: remnant grassland and Red Gum (*Eucalyptus camaldulensis*) regeneration on the bank of an old drained lake. Photos: Neville Oddie*

Ultimately, I submitted eight tender bids covering several sites within the farm, totalling about 40% of the farm's area. All my tender bids were successful and proceeded to a formal contract. However, the tendering process gave much cause for reflection and it was easy to see how the process was almost certainly itself a barrier to the involvement of farmers who might otherwise have participated, or have participated more effectively.

The sorts of issues I wrestled with are listed below, and might also have caused other farmers to choose not to participate:

- a complicated and time-consuming tender process;
- the accuracy, consistency and meaning of the site assessments;
- lack of opportunity to review and refine tender bids;
- constraints on farm management activities;
- extra workload;
- a limitation to just three years of support; and
- whether or not to place a Conservation Covenant on the sites.

Working out Whether to be Involved

Thinking back on my experience, I would make the following recommendations to any landholder or farmer considering participating in any market-based incentive scheme to protect remnant vegetation, such as the Victorian Plains Tender, Bush Broker or biodiversity offsets.

1. Make the effort to understand the language and jargon used in assessments and contracts. Ask for detailed explanations of all terms used, and all calculations. Request copies of all technical reports and species lists relevant to your farm if they have not been provided.
2. Carefully examine any proposed site management plan before you agree to it. Ensure it is workable, achievable, and you can commit to the detail. Be prepared to negotiate the specifics of the draft plan if you feel a better outcome can be achieved.
3. Consider engaging an independent expert to assess the site on your behalf so that you have comparative data. The cost could be money well spent if it allows you to negotiate more effectively.
4. Be prepared to negotiate your own arrangements directly without the need for an advocate or broker.
5. Do not sign any formal legal agreement or contract until a solicitor experienced in contract law has reviewed the documents. It is highly likely that there will need to be amendments negotiated.
6. Understand all the financial aspects of the proposal and ensure you are comfortable with the likely outcome before making a carefully prepared tender, and before signing any contract.
7. Develop a strong network of people with technical knowledge that is relevant to your farm and its remnants.
8. Do not take on a bigger project commitment than your resources can sustain.
9. If you have a passion for rescuing, protecting or repairing remnant vegetation communities on your farm, then run with it and examine all opportunities—both technical and financial.

Incentives Schemes need Improving

I am concerned that market-based incentive schemes for protecting remnant vegetation do not appear to target resources to the sites of greatest need and impact. Schemes such as the Victorian Volcanic Plains Tender might indeed be equitable, in that they are open to anyone to make a bid, but I believe the concept of market-based incentives needs to be thoroughly reviewed in several major areas.

- Are the highest priority remnants in the region properly identified?
- Does the incentive target, and succeed in attracting, sites with the highest priority remnants?
- Does the management plan result in protection and enhancement of the remnants?
- How is accountability ensured?

I believe that current arrangements fall well short of the mark and that improvements should be actively sought.

Conclusion

The Victorian Volcanic Plains Tender initiative allowed for the financial underpinning of the conservation of remnant grasslands on my farm at a time when the pressure of drought and low commodity prices was constraining on-farm financial circumstances and available options and priorities. The Plains Tender project has assisted the expression and survival of remnant grassland flora and fauna species, at a time when they might have disappeared. Market-based incentive schemes are an important tool for supporting biodiversity conservation on private land, as well as farm financial viability. However, the scheme managers need to consult carefully to ensure the best outcomes can be achieved with a scarce resource.

National environment law (EPBC Act): responsibility and opportunity

Ross Rowe

Department of the Environment, Water, Heritage and the Arts Environmental Liaison Officer, outposted to the National Farmers Federation, Canberra, ACT. Email: environment@nff.org.au

Perspective

The law is commonly referred to as a joke, but even so people rarely laugh. Humour and the merits or otherwise of a particular law has a lot to do with perspective. When the Australian Government consolidated national environment laws in the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), many land managers thought that to have a protected matter on their land or farm was a liability or a hindrance to farm business, something they'd rather not know about. Perspective is critical. Many farmers and land managers now realise that the national environment law doesn't just mean there are responsibilities, but also new opportunities such as the Caring for our Country program.

What is the National Environment Law?

The EPBC Act is the result of an agreement between the state and federal governments on those issues that are managed nationally, and is administered by the Australian Government Department of the Environment, Water, Heritage and the Arts. The EPBC Act implements Australia's obligations under various international treaties and protects nationally important features in our environment.

There are seven matters of national environmental significance protected by the EPBC Act:

- World Heritage properties;
- National Heritage places;
- wetlands of international importance;
- listed threatened species and ecological communities;
- migratory species protected under international agreements;
- Commonwealth marine areas; and
- nuclear actions (including uranium mines).

The environment as a whole is also protected on Commonwealth land or where it is to be impacted by an activity of a Commonwealth agency.

The EPBC Act balances protection of the environment, especially the matters of national environmental significance, with its other objectives such as promoting ecologically sustainable development. It is a legislative tool to ensure the survival and well-being of our unique plants, animals and heritage places. It is not about stopping all development, nor stopping farmers going about their usual farm business.

The national environment law operates in addition to state and local government controls, and an approval may be required from all levels of government. If national approval is required in addition to that of state or local government, a joint assessment process is often conducted to avoid duplication and minimise red tape.

Cumberland Plain Woodlands, Mt Annan, NSW, an ecological community listed as endangered under the EPBC Act and thus a matter of national environmental significance. Photo: R. Purdie

The EPBC Act also promotes the important roles and skills indigenous people have in land management, regulates the international movement of wildlife and wildlife products, and regulates activities such as research or photography in Commonwealth parks and reserves. More information on the scope and objectives of the EPBC Act is available at <www.environment.gov.au/epbc>.

What are my Responsibilities?

The EPBC Act applies to anyone (individual or corporation) who takes an action that has, will have or is likely to have a significant impact on a matter of national environmental significance or the environment on

Commonwealth land. Such actions require approval from the Federal Environment Minister.

The responsibility to obtain an approval under the EPBC Act rests with the person taking an action. The approval process simply involves making a referral with a description of what is proposed, where, and the likely impacts on protected matters.

There are some important exemptions to the normal approval requirements. Activities that were lawfully happening prior to the introduction of the EPBC Act or the new listing of a threatened species or ecological community do not need further approval. Basically, business as usual is okay, but if there's a change in land use or intensification that may have a significant impact it's best to check first.

Since commencement of the EPBC Act in July 2000 until preparation of this paper (20 May 2009) there had been 3081 referrals made across all sectors (e.g. mining, tourism, urban development, agriculture). Over half of those (1657) were determined not to require approval. Fourteen activities had been determined to be either clearly unacceptable at the time of referral or were not approved. Through the assessment process many of the 281 projects that have been approved have been refined or changed to avoid, reduce, mitigate and offset impacts, so that the final project does not have a significant impact and is considered to be ecologically sustainable.

The Department investigates all allegations of non compliance with the EPBC Act and has a range of enforcement mechanisms available to it, including penalties of up to $5.5 million for corporations. The Department invests in education and other activities to assist community awareness.

The EPBC Act is contained in a volume of over 930 pages. More information on where protected matters occur, what is an action, significant impact guidelines, the referral, assessment and approval process, processes for listing, lists of protected matters, conservation agreements and recovery planning is available at <www.environment.gov.au/epbc/index.html>. A useful overview of the listing processes is provided by Makinson (2008).

What are my Opportunities?

Caring for our Country brings together over $2 billion of Australian Government investment in the environment and natural resource management over five years. It consolidates former programs such as the Natural Heritage Trust, the National Action Plan on Salinity and Water, the National Landcare Program, environmental stewardship and elements of Working on Country.

The focus of Caring for our Country is achieving strategic results in six national priorities:

- the National Reserve System;
- biodiversity and natural icons;
- coastal environments and critical aquatic habitats;
- sustainable farm practices;
- natural resource management in northern and remote Australia; and
- community skills, knowledge and engagement.

There are a number of targets and outcomes for each national priority. Investment proposals are invited for projects that achieve, or contribute to achieving, particular targets and outcomes. Each year a business plan is developed that provides additional detail on priorities for the year and the sort of projects that will be funded.

Caring for our Country funding is granted to groups rather than individuals. Individuals generally access assistance through projects being implemented by regional natural resource management bodies, catchment management authorities or possibly the environmental stewardship program.

More information on Caring for our Country, including funding, timing of investment rounds, projects, facilitators and the business plan is available at <www.nrm.gov.au>.

There are numerous state programs and initiatives that also provide management or in some cases financial assistance. There is an increasing awareness in the agricultural sector of other benefits native biodiversity may bring to production landscapes through crop and livestock pest control, soil health, water retention, salinity control and nutrient budgets.

Conclusion

Whether biodiversity values in production landscapes—especially those that are nationally protected—are an asset or liability, hindrance or benefit, depends in large part on perspective. This paper illustrates that with responsibility under the national environment law also comes opportunity. They go hand in hand and are two sides of the same coin. Changes in perspective can be the result of the observer deliberately moving their frame of reference or someone else spinning the coin.

Reference

Makinson, R.O. (2008). A directory of conservation-status listing processes for threatened Australian plant species and ecological communities: Commonwealth. *Australasian Plant Conservation* 17: 30-33.

Useful Contacts

Community Information Unit, Department of the Environment, Water, Heritage and the Arts. Email: ciu@environment.gov.au or freecall: 1800 803 772.

Environment Liaison Officer outposted to the National Farmers Federation. Email: environment@nff.org.au or freecall: 1800 704 520.

Glenelg Hopkins Catchment Management Authority: Habitat Network Action Plan

Lilian Parker

Glenelg Hopkins CMA, Hamilton, Vic. Email: l.parker@ghcma.vic.gov.au

Background

The Glenelg Hopkins Catchment Management Authority (CMA) region covers 25,000 km2 of south west Victoria from the South Australian border to Ballarat and Warrnambool (Figure 1). The landscape is made up of 80% private land under agricultural enterprises, and the region has 44% of the state's wetlands.

The Glenelg Hopkins region now contains less than 18% native vegetation which continues to be impacted upon by land use change, climate change and further decline and fragmentation to a range of habitats within remaining patches. Only 4.6% of the region is predominantly intact (remnant vegetation on private land), with another 12% of remnant vegetation occurring on crown land. Therefore, in order to establish effective habitat linkages, it is vital that we have a strong working relationship with the local community.

Habitat Network Action Plan

The Habitat Network Action Plan (Glenelg Hopkins CMA 2007) provides direction for development of habitat networks across the Glenelg Hopkins region. The Plan has identified where priority action is required in subcatchments containing good vegetation connectivity. This then guides future investment in habitat protection and enhancement activities for habitat network management in the region.

The Plan aims to achieve the maintenance, improvement and extension of the landscape linkages throughout the Glenelg Hopkins region through development of habitat corridors, stepping stones and mosaics. The underlying assumption is that improved connectivity leads to enhanced biodiversity conservation across the Glenelg Hopkins CMA region.

Habitat Networks

From an asset perspective, habitat networks are a series of connected or separate areas of native vegetation that are available for native plants and animals to inhabit or use for dispersal throughout the landscape.

Habitat networks maintain connectivity in the landscape, attaching one area to another to facilitate this movement and reduce isolation. This is essential for breeding and the movement of genotypes throughout the varying populations of flora and fauna species.

Patches (or blocks) and linkages (corridors, stepping stones and mosaics) are the two elements in developing habitat networks. Consideration has to be given to the size, shape and connectivity of the elements within the landscape and the characteristics of the plants or animals that may be using the network.

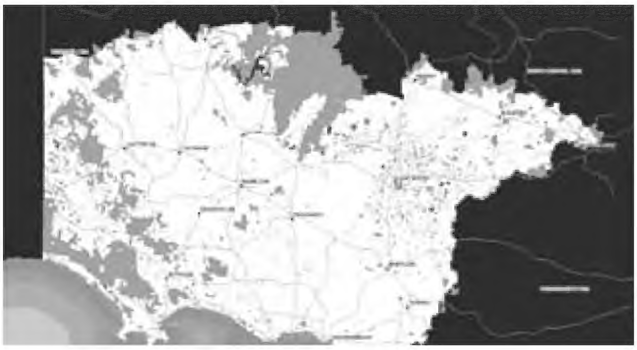


Figure 1. The Glenelg Hopkins CMA area, showing crown land (light shading) and rivers and wetlands (dark shading). Source: Glenelg Hopkins CMA (2007).

In the Plan, connectivity concepts include the following.

- Corridors that form a continuous link between two habitat patches are important for species that cannot live in, or have difficulty moving through, the surrounding cleared or modified environment.
- Stepping stones may be sufficient to allow movement of species that have some mobility but limited tolerance of conditions within the surrounding cleared or modified land.
- Mosaics of vegetation (including elements such as single paddock trees) may allow movement of highly mobile species that are tolerant of land uses in the surrounding environment.

Action Plan Process, Priorities and Details

The site identification process involved definition and mapping of priority areas for actions. Information was gained from existing data, local knowledge and community input gathered from across the region. Community input was valuable for incorporating local knowledge and ownership of potential networks.

The process for setting priorities involves a triage approach to conservation and restoration. This is based on:

1. maintaining existing high quality vegetation/habitat;
2. saving damaged vegetation/habitat that requires minimal management input;
3. saving vegetation/habitat that requires major management input but where the effort is worthwhile as it will save a significant community or species; and

4. doing nothing where success is either unlikely or the benefits are outweighed by the costs of the required actions.

General broad-scale aims of the habitat network across the Glenelg Hopkins region are to:

- develop continuous vegetated habitat corridors along all of the major rivers and streams;
- develop habitat networks of corridors and stepping stones between the major rivers and streams; and
- maintain and enhance the habitat quality of all areas identified on the sub-catchment maps as either Vegetation Protection Overlays (VPOs) or Environmental Significance Overlays (ESOs).

Detailed information in the Plan includes, at a sub-catchment scale, location, land use, existing vegetation (Ecological Vegetation Class (EVC) table), significant flora species table, significant fauna species table, and the management aims and actions for sites.

Potential Networks

After all the analysis was completed, potential networks were generally located where the most important assets occurred in the landscape. Good existing vegetation occurred in the north and west of the region, with limited remnant vegetation in central, southern and eastern areas. Major rivers create north-south linkages, while wetlands, estuaries and reserves provide existing stepping stones. Revegetation along roads and private land will connect remnants, wetlands, rivers and their tributaries.

Reference

Glenelg Hopkins Catchment Management Authority (2007) *Habitat Network Action Plan: facilitating floral and faunal movement and reducing isolation.* Glenelg Hopkins Catchment Management Authority, Hamilton, Victoria.

Top: Direct seeding site on a Chetwynd River tributary, Glenelg catchment. Bottom: Revegetation along Saw Pit Creek north of Hamilton, Wannon catchment.
Photos: Tim Covey

Does Queensland do it better? Three nature refuges in Central Queensland

Ian and Cathy Herbert

'Belgamba', Central Qld. Email: ian.herbert@bigpond.com

In Queensland, a permanent conservation covenant is called a Nature Refuge. We have been involved with three nature refuges in Central Queensland.

Belgamba Nature Refuge

Belgamba Nature Refuge is a 540 ha leasehold property in hilly forested country 30 km south of Rockhampton, in the Dee Range near the historic gold mining town of Mount Morgan. The vegetation is mainly open eucalypt forest dominated by Grey Box (*Eucalyptus moluccana*) and Lemon Scented Gum (*Corymbia citriodora*), with riverine closed forest including palm groves in the steep gullies, and some patches of semi-evergreen vine thicket. Adjoining Belgamba to the north and south are two areas of Resources Reserve (effectively National Park).

Immediately after buying Belgamba in 1990, we fenced out the neighbour's cattle, commenced a program of lantana removal, and regenerated small areas of degraded land. As the property is leasehold land we do not own the trees and they were subject to logging. In 1992 the *Nature Conservation Act 1992 (Qld)* provided the opportunity to permanently protect Belgamba through a Nature Refuge Agreement.

Negotiations with the Queensland Government started in November 1992 and resulted in the gazettal of Belgamba Nature Refuge in April 1997. Part of the reason for this lengthy process was due to Belgamba being the first nature refuge which was entirely leasehold. The forestry issue was overcome by negotiating a 100 year review which allows for the opportunity to selectively harvest commercial timber, provided that the conservation values are not adversely affected. As we thought that the probability of anyone logging the property in 100 years was very low, we agreed to this proposal.

We always intended that a large portion of Belgamba should be given the highest possible protection. Last year we commenced negotiations with the government to freehold a third of the property with the remainder being included in the adjacent Bouldercombe Gorge Resources Reserve which in time is expected to become a national park. This raises the interesting question of whether we will be required to pay the market value of the timber in the area to be freeholded, even though it cannot be logged for 90 years.

Archontophoenix Grove Nature Refuge

Archontophoenix Grove Nature Refuge is a 7 ha parcel of remnant coastal rainforest within 3 km of the rapidly expanding seaside town of Yeppoon. It contains a dense stand of tall Alexandra Palms (*Archontophoenix alexandrae*). All adjacent land has been cleared for farming or subdivision for residential lots. There is, however, a nearby mountain which is still forested. It had been a 'Camping and Water Reserve' in earlier days because of a drainage problem and should never have been freeholded. In 1995 we acquired the property and our intention was to restore its natural values by removing the rampant lantana, and provide permanent protection with a Nature Refuge Agreement. We planned to sell the block within a few years once we had achieved these objectives. Archontophoenix Grove Nature Refuge was gazetted in 1998; we sold it in 2001.

During our ownership, land values were increasing, which was reflected in a rise in our rates. We approached the local council for rate relief but were knocked back. We applied to the Department of Natural Resources for a re-valuation on the basis that our Nature Refuge could no longer be subdivided. As we had no success with our request we took the issue to the Land Court in 1999 and received a favourable ruling on the basis of loss of the 'highest and best use'. The rateable value was reduced by 25% backdated to the date of gazettal of the Nature Refuge. This case set a precedent in Queensland but also sent a mixed message that while a reduced land valuation is good for rate reduction, it is not necessarily good for resale value. This issue is more relevant in the urban fringe than in rural areas.

Bimblebox Nature Refuge

Bimblebox Nature Refuge is an 8000 ha property near Alpha about 200 km west of Emerald on the Tropic of Capricorn. In 2000 the tree-clearing debate in Queensland was the catalyst for the purchase of the property Glen Innes (later Bimblebox Nature Refuge). This was at the height of the panic clearing that took place throughout the state while the Beattie government procrastinated over legislation to curtail broad-scale tree clearing. The Desert Uplands bio-region with its seven million hectares of largely untouched Silver Leaved Ironbark (*Eucalyptus melanophloia*) and Poplar Box (*Eucalyptus populnea*) woodland was the logical next target for broad-scale tree clearing after the destruction of much of the Brigalow Belt to its east in previous decades.

Glen Innes property had not been cleared and had been conservatively grazed which meant that its environmental values were in excellent condition. This natural woodland is dominated by Silver-leaved Ironbark and Poplar Box (also known as Bimblebox) with an excellent diversity of native grasses. However there was a permit to clear over a significant portion of the property, and there was little doubt that any future owner would have exercised this permit.

A consortium of four couples including ourselves pooled our resources to try to buy the property when we heard that it was up for auction. As we could not raise sufficient funds, we successfully applied for federal funding under the National Reserve System (NRS) program to assist with the purchase. The main conditions were relinquishing the tree clearing permit, negotiating a Nature Refuge over the whole property and including a 20% grazing exclusion zone while still permitting low impact cattle grazing on the rest of the property.

Uncleared woodland conservatively grazed in Bimblebox Nature Refuge. Photo: Ian Herbert

Bimblebox Nature Refuge was gazetted in 2003. We ceased to be part-owners in 2004. In 2008 Waratah Coal announced that it intended to develop coal deposits within the Galilee Basin and build a 500 km railway line to the coast. We were horrified to see that the whole of Bimblebox Nature Refuge was to be mined. The global financial crisis may delay this project by a few years but the mine will probably proceed in the long term (see www.bimblebox.org).

The Threat of Mining

Unlike national parks, nature refuges are not protected from mining. If such protection were to be extended to the latter, would this lead to the approval process for them grinding to a halt? What options are available for the state government to recognise the environmental values of nature refuges, and the need for their continued declaration, while still allowing the mining industry to function? Another example of the threat from mining is Avocet Nature Refuge south of Emerald, which is the only release site on private land for the critically endangered Bridled Nailtail Wallaby (*Onychogalea fraenata*). Coal exploration is currently occurring, and under state law there appears to be nothing to stop this property being mined. The federal government should be concerned with the prospect of mining at both these properties: Bimblebox because of NRS funding and Avocet through its *Environment Protection and Biodiversity Conservation Act 1999*. Should the federal government use its powers to prevent mining in these cases?

Conclusion

We suspect that all other states, like Queensland, have issues associated with permanent conservation covenants. Queensland is probably no better than the others, but it must address the issues surrounding mining where there is competition with conservation.

Field trip visit to the Grassy Groundcover Research Project's site at Moyston

Paul Gibson-Roy

Grassy Groundcover Research Project, Greening Australia/The University of Melbourne, Burnley, Vic. Email: roypg@unimelb.edu.au

As part of the Halls Gap Forum field day, delegates visited one of the 13 Grassy Groundcover Research Project (GGRP) sites. Some readers of APC will note that this project has been highlighted through presentations at recent ANPC conferences and in APC editions. This was the first time, however, that ANPC delegates have toured a site.

The GGRP Moyston site is located on the property of Mr David Hermans. It is one of five 1 ha sites within the Wimmera Catchment Management Authority (CMA) region. The Grassy Groundcover Project was established to investigate the reconstruction of species-rich grassland (or grassy-understorey) communities on agricultural land. The Moyston site was sown over a three year period beginning in 2005, initially with a small 20 m x 20 m area, and thereafter the remaining 1 ha being direct-sown in 2006 and 2007. All seed was collected locally and for most forb species, plants were propagated and grown in seed-production systems to yield sowable quantities of seed.

Forum participants standing in the reconstructed grassland. Photo: Liz Fenton

Delegates were taken across the site to look at experimental treatments showing the effects of one, two and three years chemical weed control versus soil-removal (scrapes). There was considerable interest in the general success of the field sowings, with most of the 1 ha paddock now covered in native grass cover. Delegates were also interested in the apparent impact of soil removal (pre-sowing) in retarding the competitiveness of weed species. It was also observed that on these low nutrient plots, evidence of rabbit droppings (extremely prevalent in non-scraped areas) was markedly reduced. This suggested biomass on the high nutrient areas was more appealing to these herbivores.

Floristically this GGRP site is not as diverse as others. However, forbs at this site seem to have been heavily grazed by rabbits, wallabies and kangaroos. Despite this, delegates were impressed to note numerous small wildflowers emerging across the site, which in time, may consolidate from vegetative structures if grazing pressure reduces.

All-in-all it was a very interesting stop-over. Forum delegates on this occasion got to see for themselves something many have heard about for some time, and were able to make up their own mind on its relative merits.

Paul Gibson-Roy discussing experimental treatments for the reconstructed grassland. Photo: Liz Fenton

Report from New Zealand Plant Conservation Network

Bec Stanley

Email: rebecca.stanley@arc.govt.nz

Network Conference Proceedings Published

The proceedings of last year's NZPCN conference have now been published. The conference, the fifth annual meeting of the Network, was a celebration of New Zealand's native plant life. It was also a chance to reflect on progress, since the Network's 2003 inaugural conference, towards New Zealand's implementation of the Global Strategy for Plant Conservation. The proceedings provide abstracts and/or papers of presentations from the conference and details of the workshop discussions and subsequent recommendations. These workshops, held to capture members' views on various aspects of plant conservation, were: in-situ protection of plant life, ex-situ management of plant life, plant promotion, advocacy and information, training and education, research. An electronic copy of the proceedings is freely available to members on the NZPCN website and hard copies are available for sale: $NZ15 (members), $NZ25 (non-members). Please send orders to PO Box 16-102, Wellington, enclosing a cheque made payable to the NZPCN.

Greater Risk to Threatened and Uncommon New Zealand Plants

More plants have been added to New Zealand's threatened plant list according to the latest list published in March (de Lange *et al*. 2009). It reveals a 60% increase in the number of critically endangered plants, reflecting a worsening situation for our native flora. Over one-third (38%) of the native flora is now included as threatened or uncommon. The largest proportion of threatened plants is found in lowland habitats (30%), followed by montane (24%) and coastal habitats (23%). Two species of forget-me-not (*Myosotis* spp) finally have been declared extinct after not being seen for decades. The paper predicts that, unless action is taken soon, New Zealand risks losing more plants from the wild.

NZPCN Strategy

The NZPCN Council is in the process of developing a strategy setting out how the Network will contribute to the Global Plant Conservation Strategy targets and achieving our own vision (that 'no indigenous species of plant will become extinct nor be placed at risk of extinction as a result of human action or indifference, and that the rich, diverse and unique plant life of New Zealand will be recognised, cherished and restored'). This is imperative considering the new threat listing. The strategy will make it easier for our members to assist with implementing actions to achieve the targets and understand what we can realise together as a network. While NZPCN may not always be the lead agency responsible for implementing the global strategy, our role is to facilitate its implementation by advocating and campaigning for plant conservation at legislative and policy levels, as well as providing information and support to plant conservation practitioners, landowners and managers.

Reference

de Lange, P.J., Norton, D.A., Courtney, S., Heenan, P.B., Barkla, J.W., Cameron, E.K., Hitchmough, R.A. and Townsend, A.J. (2009). Threatened and uncommon plants of New Zealand (2008). *New Zealand Journal of Botany* 47: 61–96.

Research Roundup

Auld, T.D. (2009). **Petals may act as a reward: myrmecochory in shrubby Darwinia species of south-eastern Australia.** *Austral Ecology* 34(3): 351-356.

Burrows, G.E., Virgona, J.M. and Heady, R.D. (2009). **Effect of boiling water, seed coat structure and provenance on the germination of *Acacia melanoxylon* seeds.** *Australian Journal of Botany* 57: 139-147.

Calder, J.A. and Kirkpatrick, J.B. (2009). **Climate change and other factors influencing the decline of the Tasmanian cider gum (*Eucalyptus gunnii*).** *Australian Journal of Botany* 56(8): 684-692.

Griffith, S.J. and Wilson, R. (2008). **Wetland biodiversity in coastal New South Wales: the Wallis Lake catchment as a case study.** *Cunninghamia* 10(4): 569-598.

Hutton, I., Coenraads, R., Auld, T.D., Denham, A.J., Ooi, M.K.J. and Brown, D. (2008). **Herbicide impacts on exotic grasses and a population of the critically endangered herb *Calystegia affinis* (Convolvulaceae) on Lord Howe Island.** *Cunninghamia* 19(4): 539-545.

Kochanek, J., Steadman, K.J., Probert, R.J. and Adkins, S.W. (2009). **Variation in seed longevity among different populations, species and genera found in collections from wild Australian plants**. *Australian Journal of Botany* 57: 123-131.

Lewis, D.L., Brocklehurst, P.B., Thackway, R. and Hill, J.V. (2008). **Adopting national vegetation guidelines and the National Vegetation Information System (NVIS) framework in the Northern Territory.** *Cunninghamia* 10(4): 557-567.

Penman, T.D., Binns, D.L., Allen, R.M., Shiels, R.J. and Plummer, S.H. (2008). **Germination responses of a dry sclerophyll forest soil-stored seedbank to fire related cues.** *Cunninghamia* 10(4): 547-555.

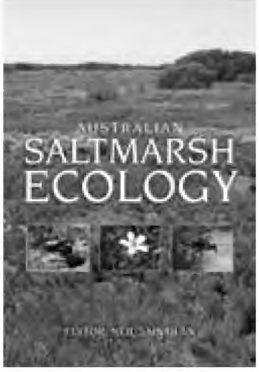
Ricciardi, A. and Simberloff, D. (2009). **Assisted colonization is not a viable conservation strategy.** *Trends in Ecology & Evolution* 24(5): 248-253.

Book Review

Australian Saltmarsh Ecology

by Neil Saintilan (Editor), CSIRO Publishing, Collingwood, Victoria, 2009, 248 pages (graphs, tables, diagrams, black and white photographs, with some colour plates), paperback.

ISBN: 9780643093713 Price: AU $99.95
Available from: www.publish.csiro.au



As stated on the CSIRO website, this is the first book to explore Australian saltmarshes from an ecological perspective.

The editor, Neil Saintilan, is the Principal Research Scientist at the Rivers and Wetlands Unit in the NSW Department of Environment and Climate Change, and has been researching the ecology of coastal wetlands for more than twenty years. The book pulls together findings from disciplines as varied as soil chemistry, botany, invertebrate zoology, genetics and natural resource management, and puts these together in context and order.

There is a logical progression in the ten chapters, from global understanding of saltmarshes and their broader characteristics, to finer-detailed examination of saltmarsh as habitat for specific fish, crab, mollusc, bird, microbat(!) and other animal species. The book rounds off with human-saltmarsh interactions and management.

The first chapter outlines how saltmarshes in Australia resemble, and differ from, those of other continents, and why studies in the northern hemisphere may not translate readily to, say, saltmarshes in Tasmania. The uniqueness of Australian saltmarshes seems to be a constant theme throughout the following chapters, as comparisons between northern hemisphere saltmarshes and those in Australia continue to throw up surprising dissimilarities.

Biodiversity as a theme is explored in Chapter 2 in some intriguing figures and graphs of saltmarsh diversity at varying scales. That, and subsequent chapters, explore the components: geomorphology, vegetation, use of resources by plants and animals, and their interspecific interactions. Two examples that I found particularly fascinating were the interplay between mangroves and saltmarsh (influenced by climate and local conditions), and how plant communities surrounding saltmarshes might affect the predator-prey relations of raptors and shorebirds. Some of the 'stories' that emerge are uniquely Australian: I can't imagine too many places in the world in which temperate-zone saltmarshes would be necessary to sustain an endangered species of parrot!

The authors were careful to include reviews of the possible impacts of invasive species, such as the sharp rush (*Juncus acutus*) and the European green crab (*Carcinus maenus*).

Book Review (cont.)

There is a whole chapter about mosquitoes and their associated issues, including the transmission and management of Ross River virus. The effects of changing land use, pollution and climate change are also given good coverage.

The inclusion of anthropogenic impacts throughout leads seamlessly into the final chapters, which focus on the conservation, management and monitoring of saltmarshes. Individual sections cover the effects of land use including agricultural and recreational use, plus reviews of legislation, community education, mapping and rehabilitation.

Each chapter is well-referenced, and includes local unpublished theses as well as technical reports, and papers from national and international journals. A fair percentage of the references are recent, having been published within the last decade, reinforcing both the currency of this book and how much it is needed.

This book would be ideal for anyone with a scientific interest in Australian ecosystems, and of most value to those with a research background and a desire to 'bone up' on areas outside their fields of expertise. It may be useful to groups who have stewardship over coastal areas, as it will give them a starting point to get into the science and management approaches needed to protect saltmarsh areas. I found myself wanting to explore specific topics beyond the scope of this book, and this is where the references will come in handy.

Although beyond the intended scope of this book, a much larger section, or even a whole chapter, devoted to community awareness, education and involvement, would have been greatly appreciated by this reader! I think that the valuable work done by scientific researchers, as demonstrated in this book, needs to be shared with stakeholders and a wider public. The skills required for public communication of science are becoming increasingly part of the multidisciplinary approach, and I am sure would aid in future conservation efforts for Australia's saltmarshes, as well as that of other ecosystems.

I can't help but compare this book with W.J. Dakin's (1952) classic *Australian Seashores*. Dakin wrote for a lay audience, eloquently using the common language of the day to entice the reader and invite further study. Although the styles are very different, both books introduce a subject poised on the brink of greatly-increased public interest as well as scientific investigation.

Linda Dalgliesh, Ecosystems Site Coordinator, Everlasting Concepts, Bedford WA.

Information Resources and Useful Websites

Top 25 Australian Ecological Restoration Projects

Global Restoration Network

http://www.globalrestorationnetwork.org/countries/australianew-zealand/australia/

As part of the lead up to the 19th World Conference on Ecological Restoration, to be held in Perth in August this year (see Conferences), a panel was set up by the Ecological Management & Restoration (EMR) journal with support from the Ecological Society of Australia to identify the best ecological restoration projects in Australia and New Zealand. The 'top 25' and other highly commended projects for Australia cover a wide range of ecosystem types, including grasslands, wetlands, eucalypt forests and rainforests. A map of Australia indicates the location of the projects, and hot links for each project provide further information about them.

Farming and the national environment law: EPBC Act

http://www.environment.gov.au/epbc/publications/farming-epbc.html

Changed land uses or intensified land management practices might trigger the Australian Government's Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). If you or someone you know is uncertain about whether your on-ground activities trigger the EPBC Act, this brochure provides useful information. It aims to help you find out whether there are nationally protected plants, animals, wetlands, vegetation types or heritage values on your property or those of your friends, whether your proposed farming activities will have a significant impact on them, and what activities might be exempt under the Act. For further information you can also contact the Australian Government's Environment Liaison Officer at the National Farmers' Federation (phone 1800 704 520 or email environment@nff.org.au).

Modelling Climate Change Impacts on Sleeper and Alert Weeds

J.K. Scott, K.L. Batchelor, N. Ota and P.B. Yeoh

CSIRO, 2008

Weeds are among the greatest threats to biodiversity in Australia and a significant cost to agriculture. The potential impacts of particular species within a region may increase or decrease as future changes in climate modify the potential distribution of each weed species. Knowledge of these potential changes in risks will help land managers prioritise their resources and develop appropriate weed control or containment strategies. This report describes 41 environmental weed species that were assessed for their change of potential distribution due to climate change. The report and associated material can be downloaded from <http://csiro.au/resources/Sleeper-Alert-Weeds.html>.

Australian Soil and Land Survey Field Handbook (Third Edition)

The National Committee on Soil and Terrain
CSIRO Publishing, 2009
Price: AU $64.95

The Handbook specifies methods and terminology for soil and land surveys, uses one reference set of definitions for the characterisation of landform, vegetation, land surface, soil and substrate, and advocates that a comprehensive suite of land and soil attributes be recorded in a uniform manner. This third edition includes revised chapters on location and vegetation as well as some new landform elements. The book will be of value to all professionals involved in land resource surveys, as well as to students and educators in soil science, geography, ecology, agriculture, forestry, resource management, planning, landscape architecture and engineering. Further information is available at <http://www.publish.csiro.au/nid/20/pid/5230>.

Flora of Australia, Volume 44A
Flora of Australia, Volume 57

CSIRO Publishing, 2009
Price Vol. 44A: AU $130 (hardback) or AU $110 (paperback)
Price Vol. 57: AU $180 (hardback) or AU $140 (paperback)

Volume 44A documents four subfamilies, 80 genera and 405 species in the Poaceae (the grass family). It includes species of Austrostipa and Poa and of weedy genera such as Nassella, Briza and Ehrharta. Volume 57 is the fifth volume in the series covering lichens, including ecologically significant families that colonise the bark of trees and shrubs in monsoon vine thickets and in coastal and montane rainforest across northern Australia. It contains complete or partial accounts of 21 families, and includes 78 genera and 654 taxa. Further information is available at <http://www.publish.csiro.au/nid/20/pid/6020> and <http://www.publish.csiro.au/nid/20/pid/6072>.

Conferences and Workshops

The International Association for Ecology (INTECOL)
10th International Congress
Ecology in a Changing Climate: Two Hemispheres – One Globe

16-21 August 2009
Brisbane, Qld

Hosted by The Ecological Society of Australia and The New Zealand Ecological Society, conference participants will explore how global climate change has impacted, and will further impact, ecosystems and their vital services to human communities. They will examine unique features of ecosystems in the southern and northern hemispheres but look for common elements in a search for solutions to this looming problem. Symposia will represent all scales of ecology from individual organisms to landscapes, and report on a diversity of ecosystems—from marine to freshwater aquatic systems, and from arid to rainforest and polar to tropical terrestrial ecosystems.

Further information: http://www.intecol10.org

Society for Ecological Restoration International (SERI)
19th World Conference on Ecological Restoration
Making Change in a Changing World

23-27 August 2009
Perth, WA

SERI world conferences aim to provide a critical platform to assist in defining the principles of restoration, understanding goals and milestones, debating what ecosystem functions to measure and closing the gap between the science of restoration ecology and the practice of ecological restoration.

Themes to be included in the 19th conference include:

- restoration ecology in a changing world
- social and cultural aspects of restoration
- restoration at the landscape scale
- ecological restoration of ecosystems
- ecological restoration of disturbed sites
- ecological restoration within urban areas
- ecological restoration of threatened species, populations and habitats
- management and technical aspects
- disturbance ecology and management.

Further information:
http://www.seri2009.com.au/pages/home.html

Conferences and Workshops (cont.)

Xth Australasian Bryophyte Workshop

30 August - 5th September 2009
Manjimup, WA

The workshop will include daily field trips to a variety of vegetation types ranging from granite outcrops, wandoo woodland, lakes and swamps, jarrah (*Eucalyptus marginata*) and tall karri (*Eucalyptus diversicolor*) forest. Time will be set-aside for special interest groups and there will be some evenings devoted to talks and poster presentations. As numbers will be limited, those interested should contact Louise Biggs (Louise.Biggs@dec.wa.gov.au) or Lachie McCaw (Lachie.Mccaw@dec.wa.gov.au).

Charles Darwin University & NT Government Charles Darwin: Shaping our Science, Society & Future

22-24 September 2009
Darwin, NT

The year 2009 marks the 200th anniversary of the birth of Charles Darwin and the 150th anniversary of his work The Origin of Species. Through a combination of meticulous observation and innovative thinking, Darwin developed an explanation for the incredible variety of living things: that evolution is driven by natural selection. The symposium will provide an opportunity to appreciate, debate, and even challenge Darwin's findings, and will bring together an exciting range of speakers from around the globe.

Further information: http://www.cdu.edu.au/cdss

Conference of the Association of Societies for Growing Australian Plants

Australian Plants in the 21st Century

26 September - 2 October 2009
Geelong, Vic.

The conference presentations include topics such as using native plants in contemporary landscapes, native plants and climate change, seed banking, covenanting to protect native flora, ecosystem decline in isolated habitats, threatened species research and many others. Excursions to the Otway Ranges and Royal Botanic Gardens, Cranbourne are also on the agenda.

Further information: http://asgap2009.apsvic.org.au/

Botanic Gardens of Australia and New Zealand (BGANZ) Congress 2009

Plan(e)t Priority: Regional Reality

8-10 October 2009
Mackay, Qld

Presentations and papers for the congress include topics such as delivering living collections information online, rethinking botanic gardens in the face of climate change, the role of seedbanks in a changing environment, the significance of regional botanic gardens and their role in climate change resilience, and engaging the community to bring plants to life. Field trips associated with the congress will provide an introduction to the hinterland landscapes around Mackay.

Further information:
http://www.bganz.org.au/congress.html

Australian Systematic Botany Society (ASBS) Conference

Systematic botany: from science to society

29 November - 6 December, 2009
University of New England, Armidale, NSW

The conference will highlight the discovery, analysis and synthesis in plant diversity research

and its impact on society, and will include a workshop on 'National accreditation of providers of biological identification'.

Further information: from ASBS website <http://www.anbg.gov.au/asbs/> or from Jeremy Bruhl (jbruhl@une.edu.au)

ANPC Corporate Members

ANPC acknowledges the support of the following corporate members

Albury Botanic Gardens, NSW

Australian National Botanic Gardens, ACT

Botanic Gardens of Adelaide, SA

Botanic Gardens Trust, NSW

Centre for Plant Biodiversity Research

Department of Environment and Conservation, WA

Dept of Sustainability and Environment, VIC

ForestrySA

Greening Australia, VIC

Redland Shire Council, QLD

Royal Botanic Gardens Melbourne, VIC

Royal Tasmanian Botanic Gardens, TAS

Sydney Olympic Park Authority, NSW

University of Melbourne, Burnley Campus, VIC

ANPC Major Sponsors

GOLD SPONSORS

Australian National
Botanic Gardens, ACT

OTHER SPONSORS

Centre
for Plant
Biodiversity
Research

NSW
Environmental
TRUST

The
Norman
Wettenhall
Foundation

Australian Government
Land & Water Australia

Glenelg Hopkins
CMA

Wimmera
Catchment Management
Authority

State Government
Victoria
Department of
Sustainability
and Environment

grampians
estate

Greening Australia

Plant Germplasm Conservation in Australia

Strategies and Guidelines for developing, managing and utilising *ex situ* collections

FULLY REVISED EDITION

Edited by: C.A. Offord and P.F. Meagher
ANPC in partnership with MSB Australian Partners

Chapter 1: Introduction, including Plant Conservation in the international and Australian contexts

Chapter 2: Germplasm conservation options and major considerations

Chapter 3: Seed and Vegetative material collection

Chapter 4: Seed Banking

Chapter 5: Seed Germination and Dormancy

Chapter 6: Tissue Culture

Chapter 7: Cryopreservation

Chapter 8: Living Plant Collections

Full of practical case studies to demonstrate principles of germplasm conservation in Australia

A handy companion to the 'Guidelines for the Translocation of Threatened Plants in Australia' (Second edition)

SUPPORTED BY: ANBG, LWA, BGT (NSW), DEH (SA), RGB KEW

Available from early September 2009

Refer to Website for Order form
http://www.anpc.asn.au/books.html or from the ANPC Office (details below)

Australian Government
Australian National Botanic Gardens

exchange
national vegetation knowledge service

MILLENNIUM SEED BANK PROJECT
Kew

Australasian Plant Conservation
BULLETIN OF THE AUSTRALIAN NETWORK FOR PLANT CONSERVATION INC

For further information contact:
Australian Network for Plant Conservation
GPO Box 1777
Canberra ACT 2601, Australia
Ph: + 61 2 6250 9509
Fax: + 61 2 6250 9528
Email: anpc@anpc.asn.au
Website: http://www.anpc.asn.au